

## Classified

**RATES:** Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

**PAYMENT** in advance is required for advertising in this column.

**REPLIES** to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

**EXCELLENT OPPORTUNITY**—Large well-known manufacturer has an opening for field sales representative who thoroughly understands commercial refrigeration and has some knowledge of air conditioning. Must know how installations should be made and be fully capable of teaching salesmen how to estimate and sell these products. Only experienced men with record of sales production will be considered. Our employees know of this ad. Box 812, Electric Refrigeration News.

**SALES ENGINEER.** Financially strong manufacturer building an air conditioning sales organization has an opening for a man who knows air conditioning application, layout, estimating and practical installation work. Consideration given only to men who have had fundamental experience in commercial refrigeration. This opening is primarily a headquarters position and presents a real opportunity for a man who can assume responsibility. Box 813, Electric Refrigeration News.

### EQUIPMENT WANTED

**WANTED TO BUY**—General Electric hermetic sealed units, household models preferred. REX REFRIGERATION SERVICE, INC., 446-48 East 79th Street, Chicago.

### EQUIPMENT FOR SALE

**GIBSON** highside float evaporators, all porcelain, \$6.95 (4 tray). Gibson, Spanton and Trukold seals \$2.35. Cutler-Hammer thermostats (new) \$2.45. Detroit Lubricator thermostatic expansion valve, model No. 673 with flange \$3.95; cut for any size S.A.E. fitting \$4.45. Johnson Motor compressor, direct drive units suitable for Gibson, Majestic, Spanton, Bohn replacements, twin cylinder 7 1/4 inches in height \$14.50. Fully guaranteed (factory rebuilt). Federal 6 cubic ft. 1936 model equipped with new type Westinghouse capacitor motor \$60.00, in original crates. FEDERAL REFRIGERATOR CORP., 67 E. 25th St., New York City.

**DEALERS, SERVICEMEN.** Used refrigerators "As Is." Recondition, spray them yourself. Frigidaires \$17.00 up, Kelvinators \$12.00 up, Electrolux \$25.00 up; also Copelands, Majestics, Servels, Ice-O-Matics & others. Frigidaire units \$15.00 up; C 1 h.p. \$75.00; Mayflower 1 h.p. unit \$65.00; 1/2 motors \$4.50. PILGRIM REFRIGERATION CO., 43-47 39th Place, Long Island City, N. Y.

**FRIGIDAIRE** plain T two temperature valves \$2.50. Mercoid No. 848 controls complete with tube \$5.00. Try Warrenol for stuck-up compressors. Samples available. Thermostats, float valves, and expansion valves rebuilt. Prompt service. Same day shipment on refrigerant gases. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

**CABINETS**—closeouts—1935 and 1936 high-grade cabinets—steel frame—Balsam Wool insulation—attractive styling—4, 5, 6 & 8 Cu. Ft. Dulux models—6 & 8 Cu. Ft. all

## McCord

Refrigeration  
and Air Conditioning  
PRODUCTS

- CONDENSERS
- COMMERCIAL EVAPORATORS
- DOMESTIC EVAPORATORS
- COMFORT COOLERS
- MARKET COOLERS
- AIR CONDITIONING SURFACE
- UNIT HEATERS
- BLAST HEATING SURFACE
- CATALOGS ON REQUEST

McCORD RADIATOR & MFG. CO.  
DETROIT, MICH.

porcelain models—excellent condition—low prices. Write or wire MIDWEST STAMPING & ENAMELING COMPANY, Morrison, Ill.

**FOR SALE.** Brand new methyl compressors, both single and twin cylinder, for domestic and commercial jobs up to 25 cubic feet. Also condensers, expansion valves, fittings, 1/4, 1/2, and 3/4 h.p. General Electric capacitor motors, Bristol recording instruments, etc. All new merchandise, attractively priced for quick disposal. Box 811, Electric Refrigeration News.

**FOR SALE 9** Brunner refrigeration compressors, "V" type—Model R-5000—4 cylinder—3 1/4" bore and 2 1/4" stroke—less drive pulley. These compressors are practically new—used only for display purposes. Priced right for quick sale. Box 810, Electric Refrigeration News.

### REPAIR SERVICE

**MAJESTIC UNITS:** any model, rebuilt or exchanged \$20.00 f.o.b. Chicago. Guarantee six months. All models in stock for prompt exchange. Wholesale only. REFRIGERATION PRODUCTS, INC., 122 W. Illinois St., Chicago, Ill.

**GENERAL ELECTRIC** sealed units repaired, exchanged. Work guaranteed. Majestic units rebuilt, exchanged, \$20.00. Satisfied customers in all parts of the United States. Give model when writing. REFRIGERATOR ENGINEERING PARTS & SERVICE CO., 2800 So. Parkway, Chicago, Ill.

**MAJESTIC UNITS** repaired \$17.50. General Electric units, \$30.00. Send your Majestic units to Ft. Smith and get them fixed right. We positively guarantee that we can make Majestics freeze as fast as when new. PENO SERVICE CO., Ft. Smith, Ark.

**GENERAL ELECTRIC** monitor top units. Exchanged—rebuilt—a wholesale service for dealers. Large unit replacement stock carried on most types. Our shop equipment includes special tools and machinery essential to reoperate these hermetics properly. We do not experiment on your units. We have been successfully rebuilding General Electric units for over three years. The unit returned to you will resemble a new one in operation, appearance and current consumption. Our price is low for the quality of work furnished. When writing give all information as on name plate in front of the control switch. Units guaranteed for one year against defective operation. REX REFRIGERATION SERVICE, INC., 446-48 E. 79th St., Chicago, Ill.

## Two New Kelvinator Dealers Start Out With 'Open House'

**MONTGOMERY, Ala.**—Two new Kelvinator dealers, Clay Coe Appliance Co., Inc., and Kirby Appliance Co., opened their stores with "open house" promotions which gave them an active prospect list to start with, as well as quite a few immediate sales.

More than 4,700 women were invited to the Coe company's open house during the two-day presentation of "Every Woman's Problem," the three-act play written by Lucille Martin, home economist for R. P. McDavid & Co., Inc., Kelvinator distributor in Birmingham.

The promotion was carried on as a radio hostess school, only radio advertising being used. Largest theater in Montgomery was used for the play, 2,500 women witnessing the first performance, with 300 or 400 turned away because of lack of space. On the second day 1,800 women were present, and 400 more listened in over a loud-speaker system set up in a theater across the street.

About 1,200 women visited the Coe showroom during the two days, and several sales resulted. Some 2,000 prospect names were obtained, all of whom stated they were definitely going to buy either a refrigerator, range, or water heater sometime soon. This list is large enough to keep the Coe salesmen busy for the next six months.

Clay Coe, head of the dealership, was formerly domestic sales manager for McDavid & Birmingham. R. J. Christian is head of the firm's service department.

Kirby Appliance Co. held open house for three days, with Miss Martin as hostess. Refreshment, souvenirs and gifts were given to the guests, and a new Kelvinator electric refrigerator was first prize in a promotion contest.

Harold Kirby, head of the company, had been a salesman in Montgomery for Alabama Power Co. for two years before starting his own dealership.

## Layng Speaks to First Meeting of Dealers

**NEW YORK CITY**—Grant Layng, sales manager, Crosley Distributing Corp. here, was principle speaker at the first meeting of the dealers organization recently formed by Westchester County radio and refrigerator dealers, held here recently.

The Westchester Lighting Co. is planning an active sales campaign through the dealers, and has given up all direct merchandising in its territory.

## 500 Dealers Attend Detroit Meeting Of S-W Radios

**DETROIT**—Although the mercury touched thermometer tops here last Wednesday and Thursday, 500 dealers and salesmen attended the open house pre-showing of the 1937 Stewart-Warner radio line and promotional material, held by Morley Bros., S-W distributor for the state of Michigan, in the ballroom of the Hotel Wardell.

A non-recourse finance plan for dealers, and a complete display program and service, featuring S-W "Poster-Panels," are highlights of the merchandising features for the new line.

Cooper photo-tone speakers, trilinear automatic volume control, five point visual tone control, are among the selling points in the 11 electric radios in the S-W line of 18 models. Prices range from \$149.95 down to \$22.50.

The "Poster-Panels" consists of a series of seasonal window display setups done in color. Opening one, the announcement display, available August 1, centers on an "opening night" theme, claiming that the new S-W "Gives you the best seats...for every broadcast." Others in the set, available the first of each succeeding month, feature the Horace Heidt S-W radio broadcast tie-in, a foot-ball and a Christmas display, and others.

Three panels, one 56 inches high, and the others 32 and 24 inches, are sent to the dealer with the announcement display. New poster panels are sent to him at 30-day intervals from then on.

In addition to this service, new window displays, sales promotional booklets and folders, radio log books, all available for dealer use, were exhibited at the S-W radio show.

Leading the S-W radio advertising program for 1937 will be the series of radio broadcasts, starting September 1, in which Horace Heidt and his Brigadeers (who have been on the S-W Alemtite program for the past year and a half), will advertise the new radio line each Monday night over the Columbia network from 8 to 8:30 p.m. central standard time.

Localized newspaper advertising, national magazine, trade, and farm publications will also be used by the Stewart Warner Corp. for its radio promotion.

William A. Biel, district manager of the Stewart Warner Corp. and Carl Crandell, appliance sales manager of the company's Detroit branch, were present to get dealer orders at the Morley Bros. showing. A. Hoppock, company field engineer, accompanied Mr. Biel to attend the new line presentation.

"We find that there is a tremendous market in farm radios this year—especially on battery sets," declared Mr. Biel, "and we have undertaken an extensive advertising campaign in farm trade papers to promote sales to this market," he added.

Eleven models were displayed in the Wardell ballroom, where a giant replica of a radio, with the back part of the cabinet facing the audience to exhibit the enlarged copper photo-tone speaker, centered the stage display.

## Leonard Shipments Gain 52.6% in 9 Months

**DETROIT**—Shipments of Leonard domestic electric refrigerators for the nine months' fiscal period ending June 30 show an increase of 52.6% as compared with shipments for the corresponding period in 1935, R. I. Petrie, sales manager of Leonard Refrigerator Co. announced recently.

## Johnson Heads New Crosley Outlet

**LOUISVILLE**—J. E. "Jimmie" Johnson, founder and president of the Cooper-Louisville Co., Crosley distributor here, has resigned from the firm to found and head the Johnson Distributing Co., new Crosley distributorship in Tampa, Fla. S. J. Rapier, vice president of Cooper-Louisville Co., succeeded to the presidency.

When Mr. Johnson resigned, he was unanimously elected vice president of the directorate of the Cooper-Louisville Co. at the request of new officers and stockholders. Under his direction the company become one of the largest distributing organizations in the country, with sales approximating a million dollars per year.

S. J. Rapier, new president, started with Cooper-Louisville Co. as a salesman, was later appointed supervisor, and then vice president. Mr. H. O. Thomas will continue to be secretary-treasurer of the Louisville concern, a position which he has held for several years.

Cooper-Louisville Co. recently moved into new and larger quarters.

## Neisler Directs Permutit Sales in Southwest

**SAN ANTONIO, Tex.**—J. T. Neisler, of this city, has been appointed to represent The Permutit Co., New York City manufacturer of household water conditioning equipment in the Southwest district.

For many years factory representative of household specialties, Mr. Neisler will work in the territory which includes Texas, New Mexico, and Arizona, with headquarters in San Antonio.

Mention

When you're talking

QUALITY



This progressive refrigerator salesman is talking quality. He's pointing out to his prospective customer the outstanding features, such as heavy steel cabinet, efficient motor and compressor, which make for dependability, long life and operating economy. "The entire cabinet is Bonderized," he adds, "as protection against rust, and chipping and peeling of finish. It's long-lasting and easy to keep clean."

His customer is impressed, too, because

she has seen the Parker advertising in the Saturday Evening Post and knows that Parker Bonderizing and other Parker rust-proofing processes are the most effective rust-proofing methods. She knows that lasting beauty of finish, on iron and steel products, demands Parker rust protection!

Mention Bonderizing when you're talking quality. It's a quality feature. It arouses interest, and speeds up the selling process.

PARKER RUST-PROOF COMPANY, 2197 E. Milwaukee Ave., Detroit, Michigan



For more than 21 years, we have devoted our entire time, talent and energy to the improvement of rust-proofing methods. A book showing what a refrigerator salesman should know about Bonderizing is available. Write for one today.

PARKER

RUST-PROOFING

processes

BONDERIZING • PARKERIZING



## REFRIGERATION NEWS

Registered U. S. Patent Office

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS.

VOL. 18, No. 12, SERIAL NO. 383  
ISSUED EVERY WEDNESDAYEntered as second-class  
matter Aug. 1, 1927

DETROIT, MICHIGAN, JULY 22, 1936

Copyright, 1936, by  
Business News Pub. Co.THREE DOLLARS PER YEAR  
TEN CENTS PER COPY**Crosley Mid-West Manager Reports Sales Good in Areas Hit by Recent Hot Spell; Heat Wave Extends Season, Says Sweeney****Souther Gives Reports From Distributors to Prove Statements**

CINCINNATI—On a visit to the Crosley factory in Cincinnati late last week, J. Howard Souther, Crosley district manager for parts of Illinois, Iowa, Wisconsin, and Michigan, stated that while crop damage had been very severe in different sections, as a whole there has been undue alarm, which he ascribed to the tendency of alarmists to over-emphasize things, and that appliance business has been good in the "stricken areas."

"As a matter of fact," said Mr. Souther, "business in many lines in these states is excellent. Northern Wisconsin and northern Michigan along the lake line is a great resort area and the tourist business is the best in five years. They come in endless streams and it is often im-

(Concluded on Page 9, Column 5)

**Richmond Purchases Spear Co. Rights**

PHILADELPHIA—Richmond Engineering Co., manufacturer of Airline water cooler cabinets and low side units for large and small commercial installations, has purchased the good will and rights of Spear Stove & Heating Co., former manufacturer of Spear ice water generators, milk coolers, and other low sides.

Vernon L. Frank, formerly with Spear, is now manager of sales and engineering for Airline products. The Richmond line of metal utility cabinets is distributed nationally through

(Concluded on Page 9, Column 1)

**Trip Offered to Kelvinator Salesmen Who 'Keep the Ball Rolling' with Sales**

DETROIT—Two hundred and seventy-one cruises to the West Indies, six trips to Detroit, a Chrysler six sedan, seven cash awards, and merchandise prizes will be the goals toward which Kelvinator household and commercial refrigeration salesmen will work in a "Keep the Ball Rolling Drive" which opened the second week of this month and which continues through August 29.

The cruise, to be known as the "Kelvinator Floating Sales Forum," is designed to permit salesmen to "learn, plan, and play their way through southern seas," declares Henry W. Burritt, vice president in charge of sales.

For this "Ball Roller Contest," tickets will be awarded each retail domestic salesman for every sale made. These will be placed in 18 district "balls" from which the prize winners will be drawn each week during the contest. Commercial and distributors' salesmen will also be awarded tickets for sales which will be placed in separate "balls."

To aid in the promotion of the contest, prospect booklets entitled "How To Select an Electric Refrigerator," and "The Requirements Are Met" are provided for domestic refrigerator salesmen.

Fifteen-minute radio transcriptions featuring Donald Novis, a 24-piece orchestra directed by Morton Gould, and one-minute spot broadcasts have been prepared and recorded for the dealers, Mr. Burritt says.

Deluxe models will be pushed by a factory direct-mail campaign in which promotion material will be mailed to every salesman's ten best prospects. This will be backed by newspaper advertisements featuring the Deluxe models, to tie-in with the magazine advertising.

Extra profits and awards are offered to salesmen selling allied products.

During the last week of June, factory officials conducted meetings for distributors and their salesmen in key cities throughout the country to present plans for this summer campaign.

Meetings were held in Detroit, Chicago, Minneapolis, Kansas City, Den-

**G-E Salesmanager Says Distributors Are Placing Large Re-orders**

CLEVELAND—Prolonged hot weather has spurred sales of electric refrigerators, according to reports compiled here by A. M. Sweeney, sales manager for General Electric Co.'s specialty appliance division of the appliance and merchandise department.

Carload orders for electric refrigerators have picked up appreciably, distributors and dealers reordering to replenish stock depleted by increased sales due to the unusually hot weather, says Mr. Sweeney.

"Refrigerator prospects, who postponed buying in the spring, and who for one reason or another had

(Concluded on Page 9, Column 1)

**Detroit Hospital Buys Two Conditioners For Heat Cases**

DETROIT—Installation on the same day the order was received was achieved by the Kelvinator factory branch here when a call came from the Receiving Hospital for an emergency installation of two portable air-conditioning units during the recent heat wave.

In the admitting room, where ambulances and patrols were constantly depositing the heat victims, and in the separate ward created for heat prostration cases, the two self-contained units, of 1 ton, and ½ ton, were plugged in.

G. R. Harris, hospital superin-

(Concluded on Page 9, Column 3)

**Carrier Earnings in Six Months Total \$186,539.93**

NEWARK—Approximate earnings of Carrier Corp. for the first six months of 1936 were \$186,539.93, as compared with \$25,913.71 for the corresponding period of last year, according to a report given the firm's board of directors last week by L. R. Boulware, vice president.

It was also reported by Mr. Boulware that payment had been made last month of the first \$250,000 installment on the concern's \$1,000,000 bank loan, although the installment was not due until December of this year.

**292,920 Appliances Are Sold by Norge In First Six Months**

DETROIT—Breaking all records in the company's history, sales of Norge electric refrigerators during the six months' period ending June 30 of this year surpassed the sales during the same period of last year by 38.5%, reports Howard E. Blood, president of Norge division, Borg-Warner Corp.

Total sales of home appliances for the six months' period reached 292,920 units, an increase of 56% compared to 1935, Mr. Blood said.

Washer sales for the same period went up 128% over the corresponding period of 1935; electric irons, 437%; gas ranges, 202%; electric ranges, 68%; oil burners, 210%; and commercial refrigeration units 155%.

**Seeger Increases Pay of 1700 Employees; Gives Bonuses to 1000**

ST. PAUL—Seeger Refrigerator Co. announced pay increases Monday for 1,700 employees, and bonuses for 1,000, involving a total of approximately \$90,000.

Each employee with the company two years or more will get a bonus equal to 5% of his earnings between Sept. 1, 1935, and Aug. 15, 1936, "in expression of appreciation for the cooperation and loyalty of older employees."

Effective Sept. 1, all employees will receive pay increases of 5%, officials of the company announced.

**G-E Distributors Handling Sales of 'Undabars'**

ST. LOUIS—Undabar combination beverage-and-food coolers, equipped with General Electric refrigeration systems, are now being sold on a national scale by G-E distributors and dealers.

**Norge & Frigidaire Witnesses Dispute Coolerator's Booklet Claims with Results of Tests On Electric Units & Ice Boxes****Bacteriologist Gives Data On Dehydration & Spoilage Of Food in Various Units**

DETROIT—With the presentation of charts showing comparative test standings of an ice and two electric refrigerators, Dr. Floyd W. Robison, consulting chemist and bacteriologist and witness in the Federal Trade Commission hearing here last week refuted claims made by the Coolerator Co. in its booklet, "Why Ice Is Best For Refrigeration."

Following cross-examination of Dr. Robison, Ralph R. Potter, assistant director of engineering at Norge, and Walter Jeffrey of Kelvinator testified.

First part of Tuesday's hearing was used in establishing the background of the day's only witness, Floyd W. Robison, consulting chemist and bacteriologist of this city, at one time analyst for the state, and later food and drug inspector for the U. S.

Dr. Robison testified that since leaving the agricultural department in 1911 he had made bacterial studies for Pittmans & Dean Ice Co. of Detroit, had acted as consultant for the Absopure Co., and as adviser for the Utility Electric Refrigerator Co., but had at this time no connection with any refrigerating company.

Showing him the Coolerator booklet, Mr. Welch asked Dr. Robison's opinion of the book's statement which described refrigeration as "aiming to keep the food in a natural state."

His reply was that it was not desirable to keep food in its natural state because as soon as it is taken from the ground or killed an autolytic process, or decay, begins.

"In making studies of food, what can you say as to the extent cold temperature, as long as it doesn't go below 32°, will affect flavor?" Attorney Welch asked.

A. Cold preserves flavor. In any food substance, the most satisfactory way to preserve aroma or taste is to chill it.

Q. What is the best temperature for the preservation of perishable foods?

A. As near the freezing point (32°) as you can get.

Questioned as to why that was the best refrigeration point, Dr. Robison said that at that temperature there was no structural change, allowing for the slowest migration of bacteria.

Q. What is your understanding of the term "humidity" in refrigeration?

A. The percentage of water absorption in the air.

Assuming the same temperature in an ice and mechanical refrigerator

(Continued on Page 4, Column 1)

**Safety of Refrigerant Demonstrated in Trial Room**

DAYTON—Testimony covering several series of tests conducted by Frigidaire research engineers on Coolerator refrigerators showing temperatures and relative humidities, weight loss of foods stored for certain periods, and other pertinent data, occupied the main attention of the principals at the Federal Trade Commission hearings held last Friday and Saturday here, but the sessions were considerably enlivened by a demonstration of the safety features of the refrigerator F-114, in which several of those present ate foods covered with the refrigerant.

The sessions were held in the air-conditioned comfort of the Frigidaire Corp. board of director's room. Eight witnesses took the stand before Trial Examiner J. J. Keenan. At the adjournment of this hearing, it was announced that the next hearing will probably be held Aug. 10 at Atlanta.

Chester S. Trigg, of the Frigidaire Corp.'s household advertising and sales promotion department staff, next witness who testified, stated that for his department he had participated in making some tests on a Coolerator refrigerator in November, 1935.

The ice box used had been obtained from the company laboratory, and his working instructions prior to making the test had been to secure the foods, photograph them, weigh them, place them in the cabinets, and photograph and weigh them throughout the course of the test.

Purpose of the test was to determine how well the Coolerator kept foods, Mr. Trigg affirmed. He stated that he first contacted the Frigidaire Corp.'s engineering department to see if they had an ice box, then made the preparations ordinarily used in such tests.

Mr. Trigg testified that he had been present when the foods stored in the refrigerator were first bought, weighed, photographed, and put into the ice box. He then produced a number of photographs showing the foods used (celery, lettuce, carrots, oranges, lemons, meat loaf and beef roast) at different stages of the test.

The witness was asked if he had made records of weights taken on the foods during the test. He answered yes and presented photostatic copies of several pages of his data sheets, which were also entered as commission exhibits.

Queried as to the test results as shown in his record sheets of the weight loss on the celery stored, Mr. Trigg testified that the celery weighed 137.5 grams when placed in, and 42.5 grams at the end of test, thus showing a percentage of weight loss of 69.0%.

"Why was the test made?" the witness was asked.

"We had received Coolerator literature and sales folder, I recollect, and we had also seen Coolerator advertisements in Saturday Evening Post stating that foods didn't dry out in a Coolerator, and that it was hard to notice the difference . . . I was instructed to make tests and see if they did remain the same."

A copy of the advertisement which appeared in the September 28, 1935 issue of Saturday Evening Post, re-

(Continued on Page 2, Column 1)

**Rollin M. Hyde, McCord Sales Engineer, Dies**

DETROIT—Rollin M. Hyde, sales engineer of McCord Radiator & Mfg. Co. and a pioneer in the development of finned tube condensers and evaporators for household and commercial refrigeration use, died here on Saturday, July 18, at 8 a.m. after an illness of nine months. He was 59 years old.

Surviving him are his widow and eight children. Funeral services were held yesterday morning from William R. Hamilton Funeral Chapel here.

(Concluded on Page 9, Column 2)

**Air Conditioning Issue July 29**

Next week's issue of ELECTRIC REFRIGERATION NEWS will be featured by the publication of specifications of year-round air-conditioning equipment, winter air conditioners, and humidifying equipment.

Specifications of air conditioners which have a cooling function were published in the May 20 issue. When the supply of copies of this issue was sold out, it was decided to reprint the data, with corrections and additions, in the July 29 issue.

Because dealers are now beginning to think about the possibilities of the winter air-conditioning market it was deemed advisable to supplement the previously published data with specifications of equipment designed for winter applications only. Other special editorial treatment will be given to the subject of air conditioning.

Extra copies of the July 29 issue will be available at a cost of 25 cents each. Please send remittance with order.

**10th Anniversary Number Sept. 9**

The 10-year history of the NEWS coincides with the period in which electric refrigeration has had its phenomenal growth.

Outstanding events and the most important contributions to industry development by individuals and companies during the past decade will be reviewed in the 10th Anniversary Number to be issued Sept. 9, 1936.

Readers are invited to furnish information regarding the activities of industry pioneers and facts about significant events and movements which affected the character and direction of the industry's progress. Cooperation is urgently requested to the end that proper credit may be given where due and that the record may serve as a guide to future historians.

This issue will have extra circulation, especially in all foreign markets where there is an active demand for background information on the part of many business men who are now becoming intensely interested in American refrigeration and air-conditioning equipment.



## Tests Conducted by Frigidaire Engineers on Ice Box Reported At Trade Commission Hearing

(Continued from Page 1, Column 5)

ferred to in preceding testimony, was brought out as a commission exhibit, after Mr. Trigg had identified it as being similar to that received by the company.

Degree of accuracy at which the weighing was done, where the scale used had been kept, and the number of times the door was opened each day during the test, were three major points around which the cross-examination of the witness by Attorney Raber was centered.

### Details of Tests

Mr. Trigg stated that the weights were measured within 1 gram, that the scale had been kept in the chemical laboratory at the Frigidaire plant, and that he could not definitely state how many times the box door was open during the tests. Openings of the ice box door were made merely to see and smell the foods stored, which took from five to 10 seconds, the witness testified.

The test, he claimed, was made in a room with a controlled temperature of 90° F. Pictures of the foods were taken by Clifford Mount, photographer, and pictures were taken at approximately 10 o'clock in the morning when foods were first placed in the box, and at a corresponding time at the completion of the test.

"Do the photographs represent the foods as you saw them before they went in to the ice box, and when they were taken out?" asked Trial Examiner Keenan, after Attorney Raber completed his cross-examination. The witness replied that they did.

### Klopfer Gives Test Background

Questions directed to the third witness called in the trial hearing, L. R. Klopfer, head of the test section, household engineering division, Frigidaire division of GMC, were mainly aimed at establishing backgrounds of the test mentioned by Mr. Trigg in his examination.

Mr. Klopfer stated that a J-3 (according to Nema specification measurements) model Coolerator, which is a 4 1/2-cu. ft. size box, was used in conducting the test. It was bought, he added, directly from the Duluth factory, on August 28, 1935.

### Test Room Construction

Test referred to by Mr. Trigg, the witness explained, had been conducted in a 90° F. room, temperature insulated, thermostatically controlled, and steam heated. Instructions were similar to those generally given in connection with tests of this type, namely to ice up the refrigerator,

allow its temperature to reach equilibrium before storing foods, and to weigh the foods at stated intervals.

Mr. Klopfer testified that at present there was a test being run on a Coolerator refrigerator, which was started to build up future volume of information on the comparative performance of an electric refrigerator and a Coolerator.

Opening his cross-examination, Attorney Raber asked the witness to describe the process used in weighing the foods in the test. He then asked Mr. Klopfer what use has been made of the information obtained in the test.

Mr. Klopfer answered that the test was performed largely to ascertain that various methods of refrigeration would cause a certain amount of dehydration.

Q. Did you have any indication that the test might be used in any case?

A. No.

### Report on Daily Temperatures And Ice Losses in Ice Box

Frank A. Starr, who had assisted in making the test reported in the testimony of C. S. Trigg, explained the preparations made prior to testing the Coolerator refrigerator in the week's test period which extended from November 5 to 12, 1935.

"We had the refrigerator in a 90° F. room, put ice into it two or three days before starting the test, in order that the temperature could be balanced out. Fruits, vegetables, meats, etc. were placed in the box on Nov. 5. Starting the next morning, the refrigerator temperature reading was recorded," he testified.

### 3 Thermometers in Each Cabinet

Three thermometers, in the top, in the middle, and in the bottom of the cabinet, were used for taking test readings, he explained. First reading was taken at approximately 8 a.m. This reading was taken from the thermo couples, which did not necessitate opening the cabinet door, he stated.

Asked if he had taken the readings, and if he had the data, Mr. Starr answered in the affirmative, and produced the temperature recordings. Readings throughout the test were made at approximately 8 a.m. each morning, following which the cabinet was opened, and the food load changed.

### Changing Food Loads

Mr. Starr explained that the method used by the testers in changing the food load was in relegating four cans

of water per 1 cu. ft. of storage space in the cabinet. Loads were changed three times a day, he added.

Next question put to Mr. Starr was concerning the amount of ice in the box when the test started, and when the cabinet was re-iced. He replied that there was a 100 lb. cake in the box when the test started, and that the box was re-iced whenever another filling was required in the box.

Queried as to when the box was opened, the witness replied that it was opened once in the morning for the food weighing. He said in answer to the attorney's question, that no other testers opened the refrigerator.

Q. What occasion did you have to note the weight loss of the ice during the period of the test?

A. We noted it every morning.

Q. What ice loss was noted for the end of the first day?

A. 27 lbs. five ounces.

Q. What loss was noted for the end of the 2nd day?

A. 26 lbs. 10 ounces.

For the third day, weight loss noted was 26 lbs. 13 oz. Losses for the fourth, fifth, and sixth days, as cited by Mr. Starr were: 25 lbs. 14 oz.; 23 lbs. 4 oz.; and 24 lbs. 8 oz.

### Temperatures of Boxes

Giving approximately 90° F. as the room temperature maintained throughout the test, the witness then quoted the following box temperatures recorded for three days (three readings per day): first: 52° F., 52° F., and 51 1/2° F.; second day: 52°, 52°, 51 1/2°; third day: 50 1/2° F., 50 1/2° F., and 50 1/2° F.

Each time the Coolerator was re-iced, a 100-lb. ice cake was put in, the witness said. He testified that the temperatures for the three readings at the end of the test were: 51° F., 52 1/2° F., and 51 1/2° F.

Cross-examination of the witness brought out first, the fact that there were approximately 20 other refrigerators being tested when the Coolerator test was made, that other boxes tested included different kinds of electric refrigerators, and that Coolerator was the only ice box then being tested.

### Food Cans Used in Tests

To Attorney Raber's request that he describe the food cans used in determining the food load in household unit tests, Mr. Starr stated that each can contained 1 lb. of water, and that the cans were sealed, and made of copper.

He stated that food cans were changed at 8 a.m., at 12 noon, and at 4 in the afternoon.

Trial Examiner Keenan asked Mr. Starr if he had handled the foods throughout the test, if he had observed the foods when they were originally placed in, and when they were taken out at the end of the test. He replied that he had not handled the foods, that he had observed them before they were stored, and that he had not seen the foods when they were taken from the box.

### Smith Testifies on Effect Of Air Circulation

Harry F. Smith, next witness questioned by Mr. Welch, testified that his work as a Frigidaire research engineer had included a number of tests on Frigidaire refrigerators from a variety of angles, among which were tests on absorption of odors by foods.

On tests covering food odors, the attorney asked Mr. Smith to explain the nature and extent of such tests. Taking a specific test, Mr. Smith stated that a number of foods were selected, among which were a half melon, butter, milk, water, meat (cooked and raw), and food remnants. This test was continued until odors became too pronounced.

### Cellophane Front Employed

In the test mentioned by Mr. Smith, the refrigerator used had a cellophane front in which apertures were made, and the ice cube tray unit had a door, he stated. Results on this test showed that on water stored in an open container for a long period of time after the odors had become strong, there would be a slight taste to the water, Mr. Smith stated.

He also stated that if the refrigerator doors were kept closed for a two-week period, with the same food stored, there would be a slight taste of food odors on the ice cubes.

Next bringing up the results observed on dehydration, the commission attorney asked the witness to state from his observations in this test, what is the influence of air circulation upon dehydration.

### Air Circulation and Dehydration

"As a result of our experiment we learned that if the amount of air circulation is restricted to too great an extent in a hydrator by closing the ventilators too much, slime would develop on stored food (in the hydrator), and in places outside there was a dehydrating effect which caused the foods to wilt.

"In foods stored inside the hydrator

where we had restricted amount of air circulation, we got the best results as to food preservation," he added.

Queried as to the use of food cans to determine the approximate average food load stored in a mechanical refrigerator, the witness was asked if this were the standard method of approximating food loads.

He replied that there had been no standard set up for this factor, but that Frigidaire has established a food load measuring system which is now used in all its tests. This, he explained, is standardized in that so many pounds of water are added or subtracted from the cabinet during the test, at specified times. When the food load is changed, the cans are removed from the cabinet, and substituted with an equal number of cans, in which the contents are at room temperature.

### Amount of Food Stored

Central point of the cross-examination by Attorney Raber concerned the amounts of foods used in the test which Mr. Smith had testified on in his direct examination.

"Comparatively speaking, there would be less foods in that refrigerator than would be stored in an average household ice box, wouldn't there?" he asked.

On the total food load, no, but perhaps on individual items there would be less, was the content of the witness' reply.

Trial Examiner Keenan requested the witness' opinion, as a research engineer and based on tests which he has made, as to assertions in the Coolerator booklet regarding its claims that the same gelatinous mass (as that found in the drain pipe of an ice box) . . . "is produced . . . in the cube trays of a mechanical unit by melting and freezing these cubes with the same water over and over again."

"I should say that I have never seen anything of that nature occur, although I have repeatedly melted and frozen the water in ice cube trays over and over," Mr. Smith answered.

Questioned on the next point in the booklet that "the ice cubes frozen in a mechanical refrigerator contain the same things that the drain pipe of an ice refrigerator contains," Mr. Smith's answer was:

"That is not true."

Reading the next paragraph in the booklet, Trial Examiner Keenan asked the witness' opinion on the statement: "The rest (that not absorbed by water in ice trays) of the odors and gases, then must remain in the mechanical refrigerator . . . When the mechanical refrigerator stops running, it has developed in the refrigerator a constant, cold temperature eliminating the air circulation, and the result is a stagnant foul-smelling chamber . . ."

"When the mechanical refrigerator stops running," answered Mr. Smith, "the evaporator is much colder than the rest of the refrigerator. That lower temperature continues the circulation of air in the refrigerator the same as if the evaporator were running."

Conclusive statement in the body

of the booklet to the effect that a person could not eat food from the mechanical refrigerator without tasting other food that was in it at the same time, Mr. Smith called "Certainly not true."

### Harry Williams Made Own Series of Tests

Harry M. Williams, manager of standards division, Frigidaire division, who next testified, explained tests made upon the units in the process of assembly, pressure to which parts were subjected in tests, after explaining his technical and educational background. He stated that F-114 and F-12 were the refrigerators used in Frigidaire refrigerators.

"In your opinion is this statement correct," asked Attorney Welch, quoting from the booklet: "The United States Government figures tell us that this gas (SO<sub>2</sub>) is 99 times more powerful as a killing gas than chlorine. Other gases are sometimes used such as methyl chloride, ethyl chloride, ammonia, etc."

"I wouldn't know," the witness answered.

Asked if he had had any occasion to make comparative food tests on Coolerator and Frigidaire refrigerators, Mr. Williams answered:

"I had no opportunity up till last week when the Federal Trade Commission asked me to testify in this case. I repeated for my own information some tests performed by others."

The tests which he had performed, Mr. Williams testified, were run in the last few days, and were run under Clifford Wurtz of the test department. Foods were put in a Coolerator and in a 4-cu. ft. Frigidaire, and the units were installed in a room with a controlled temperature of 90° F.

### Charts Rate of Dehydration

From reports made on the test daily by Mr. Wurtz, Mr. Williams plotted curves on a data sheet to indicate relative rates of dehydration in the boxes used in the test.

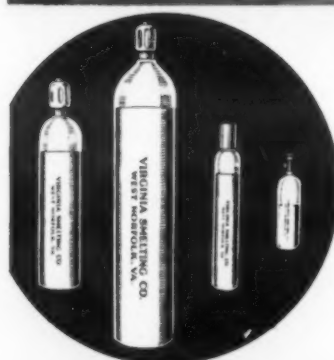
Dehydration was practically the same in both refrigerators in the four days (July 13-17) that the test had run, Mr. Williams stated. Foods in the boxes have kept equally well, he added. In the test, foods (carrots, celery, head lettuce, green string beans, ground round steak) were stored in the Coolerator cabinet, in a hydrator in the Frigidaire, and on the shelves of the Frigidaire.

Q. Mr. Williams, from the results of the tests made, and data submitted to you, and charts prepared by you, what would you say as to the accuracy of the statement: (reading from the booklet) "In other words there is absolutely no chance to sap the moisture from the air or the food in an ice refrigerator. We do not add any moisture to the air or the food, neither do we take any of the moisture that is in the air or food as a natural composition of it out of the air or food."

A. These tests prove that that is not true.

Q. What do these tests prove?

(Concluded on Page 3, Column 1)



Large-scale production makes ESOTOO (liquid sulphur dioxide) economical; yet every ounce of it is pure as the most modern equipment and the highest technical skill can make it. Less than 0.0030% moisture! Every cylinder of Extra Dry ESOTOO is carefully tested and re-tested before shipment.

V-METH-L (Virginia methyl chloride) made with the same care and shipped from the same 69 distributing points for prompt delivery to you.

**VIRGINIA SMELTING CO.**  
WEST NORFOLK, VIRGINIA



"The public's memory is short" is an adage the refrigerator manufacturer should forget.

Housewives don't buy refrigerators every day. They represent a sizeable investment. They are bought to last.

What chance has the memory to be short if, a dozen times a day, the housewife has to see and use a refrigerator which has a finish which looks as if it had eczema?

**PORCELAIN ENAMEL INSTITUTE, INC.**  
612 NORTH MICHIGAN AVENUE, CHICAGO



## FTC Trial Examiner & Attorneys Devour Freon-Covered Foods in Experiment To Prove Safety of a Refrigerant

(Concluded from Page 2 Column 5)

A. The tests prove that food is dehydrated in either a Frigidaire or a Coolerator.

Turned over to Attorney Raber for cross-examination, Mr. Williams was first asked when the charts from which he quoted had been prepared. "Yesterday," he answered. He was then asked to explain the difference between the compressor and condenser; and the passage of the refrigerant through the compressor and condenser.

### Wurtz Gives Temperature Record

Clifford Wurtz gave further testimony regarding tests specified by Mr. Williams.

Temperatures recorded during the tests, he stated, showed that at 1 p.m. Monday, July 13 (test started at 12:30), box temperature readings were: Coolerator top, 50° F., middle 51° F., and bottom 52° F. Frigidaire top 38° F., middle 40½° F., bottom, 47° F.

For the second day of the test, temperatures were: Coolerator, 50° F., 50½° F., 50½° F., while those for the three corresponding positions in the Frigidaire were: 40° F., 40½° F., and 44° F. Third day temperature recordings were 52° F., 51° F., and 51° F. for the Coolerator, and 36° F., 40½° F., and 45° F. in the Frigidaire. Those recorded for the fourth day were: Coolerator 52° F., 50° F., 50° F., Frigidaire: 39° F., 42° F., and 46½° F.

### Opinion on Dehydration

"What did you find regarding dehydration in the electric refrigerator?" the witness was asked.

"My impression was that food stored in the electric refrigerator was not dehydrated excessively," Mr. Wurtz answered. "From comparison, the same amount of dehydration occurred in both units."

Attorney Raber questioned the witness as to the amounts of food stored in each of the three positions (Coolerator, Frigidaire shelf, and Frigidaire hydrator) during the test; the temperature variations for any one day in the two refrigerators, and the exact procedure followed in weighing, photographing, and checking foods.

### Procedure in Weighing Food

Commission Attorney Welch, through his re-direct examination established the fact that the procedure followed included first taking a food item from one refrigerator and then from the other, weighing each, etc. so that the method in conducting comparative tests was similar and approximately simultaneous.

Examiner Keenan asked the witness if the difference of the food load in the two boxes would make any difference in the relative box temperatures, to which he answered "Not to my knowledge."

He also asked Mr. Wurtz if he had made any similar tests of this nature, to which he replied that he had, but not any tests comparing a Frigidaire with an ice box.

### Ed Newill Conducts Show To Prove Refrigerant Is Safe

Proof that F-114, the Freon refrigerant used in approximately 95% of the household electric refrigerators manufactured by the Frigidaire Corp. is non-toxic, non-poisonous, non-flammable, non-explosive, has been set up through tests conducted by factory chemists, and Underwriters' Laboratory, the Bureau of Mines, the University of Cincinnati, and through daily usage, was the essence of the testimony given by Edwin B. Newill, chief engineer, Frigidaire Corp.

"Through daily usage, where our engineers are in constant contact with the refrigerant, breathing the air in which it is contained, the gases have been found to be non-toxic, non-flammable, non-explosive, more than any other refrigerant in use today," Mr. Newill declared.

Approximately 1 lb. of F-114 (less than one pint) is used in the ordinary boxes from 2 to 6 cu. ft. in size, while 1½ lbs. is used in boxes from 7 to 9-cu. ft. capacity, he stated.

"Assuming that 1 lb. of F-114 is liberated at one time into a chamber the size of a 6-cu. ft. box, into the space occupied by the machine itself, what would be the percentage of concentration in the air?" Mr. Welch questioned.

"Amount of concentration would be less than 20%, Mr. Newill answered. Queried as to the harmful effect which such a concentration would have, he replied:

"None whatever to those breathing or coming in contact with the gaseous refrigerant."

Asked if he could cite tests to substantiate that answer, Mr. Newill

replied that he had breathed a higher content in short intervals. That approximately one-half of the total lung capacity might be filled with the inhaled refrigerant gas. Quantities inhaled in this manner had been sufficient to extinguish a flame upon blowing breath upon it, he added.

"Would the per cent inhaled be greater or less than 20%?"

"Greater, I feel."

"What was the effect of the test on you?"

"There was none."

"What tests," Mr. Newill was asked, "were made to determine whether the refrigerant F-114 were poisonous when taken into the human system?"

He replied that he had eaten foods which had been immersed in the liquid itself. Queried as to whether this test was more severe than others previously mentioned, Mr. Newill stated that it was; since the liquid vaporizes at 38° F., he said, the amount of refrigerant on the food eaten would be more than would ever be present in an average household refrigerator. (If the gas were liberated in the cabinet.)

### Perform Tests in Trial Room

Bringing into the hearing room a cylinder containing F-114, Mr. Newill then poured the liquid into a glass of water which he drank. Next celery dipped in the liquid refrigerant was eaten by Mr. Newill, Mr. Raber, and Trial Examiner Keenan. Ham was submerged into the refrigerant and eaten by Mr. Newill and the trial examiner.

Following demonstration was that in which Mr. Newill washed his face in the liquid refrigerant, without attempting to guard his eyes from the solution. Other tests demonstrating the non-inflammability of the liquid were also made.

Mr. Newill was next asked to estimate the amounts of food stored in the Coolerator and in the Frigidaire cabinets in the test (referred to by Williams and Wurtz in previous testimony).

He testified that there were 6 lbs. of food in the Frigidaire cabinet, 6½ lbs. in the Coolerator cabinet, and 4½ lbs. in the Frigidaire hydrator.

### Testimony on Moisture Loss

Asked what effect the food load in the hydrator would have on the moisture loss of the entire cabinet load, Mr. Newill testified:

"I've seen tests recorded which indicated that foods lost none of their moisture content, or in which the shrinkage was 1 to 3% over a three or four-day period. In my opinion foods are not changed in the hydrator to any appreciable extent, therefore this could not affect the amount of moisture loss in the foods stored in the cabinet."

Requested to give his reasons for making this statement, Mr. Newill said that if there was no change in the foods stored in the hydrator, it is easy to see that there would be no effect on the moisture loss of other foods stored in the cabinet.

### Air Space Reduction Small

Following this same trend in his cross-examination, Attorney Raber asked the witness if it were not true that by inserting the hydrator air space within the box was cut down. His answer was that it would be cut down only by the thickness of the sheet metal and the load of food stored in the hydrator.

Describing the hydrator, Mr. Newill said that it was approximately 4 inches high, 11 inches wide, and 14 inches deep. Its size, he added, represented approximately 8% of the entire cabinet space in the 4-cu. ft. box.

"That reduction of air in the open food container would make little difference in dehydrating foods in the regular food compartment," he added.

He was then asked if circulation of air was reduced when a hydrator was placed in the cabinet, and he replied that it was.

Testifying to a question concerning the amount of air taken up by food stored in the cabinet, Mr. Newill said that if more food is stored, the air circulation is slowed down, this in turn (slowed down air circulation) probably meant lower dehydration, he testified.

Attorney Raber later asked the witness if it were true that the kinds of food stored in the hydrator would affect the amount of dehydration, to which he replied "That is right."

Next centering the investigation upon the rates of air circulation, the witness was asked if tests were made to estimate this rate accurately. The rate of circulation is so low that the monometer won't measure it, he answered.

Attorney Raber in cross-examining the witness asked how long the

Frigidaire Corp. had been using the refrigerants now used in its domestic electric refrigerators. He replied that the company first made commercial use of the refrigerant F-114 about 1931-32, from which time the refrigerant was used in an increasing number of its refrigerators until this year 95% of the Frigidaire manufactured refrigerators use F-114 for the refrigerant.

Q. What refrigerant did you use before?

A. Sulphur dioxide.

Q. In what percentage of your refrigerators was sulphur dioxide used?

A. I can't answer that.

Trend of the next part of the investigation covered the servicing of units in which the refrigerant used was sulphur dioxide. Asked if there had been any replacement of the refrigerant in boxes using sulphur dioxide, Mr. Newill replied that there had. The boxes, he stated, were recharged with the refrigerant SO<sub>2</sub>. The engineers had tried re-charging the old boxes with F-114, but in most cases the originally used refrigerant was re-charged into the boxes which had used SO<sub>2</sub>.

### Frank Pierce Testifies on Harm Booklet Caused Dealers

Frank R. Pierce, manager of the household division, Frigidaire Corp., presented proof sheets representative of the complete array of advertising copy prepared by Frigidaire Corp. for the use of dealers handling the Frigidaire line.

Mr. Pierce testified that the Frigidaire Corp. announced to its dealers at meetings held in Dayton, or in territory centers, its policies in regard to its own advertising, and that concerning advertising of a competitive nature run either by other electric or by non-mechanical refrigera-

tion manufacturers or dealers.

Substance of that policy, he stated, was to stress the value of Frigidaire, and not to disparage any competitor or to be derogatory to ice refrigeration selling methods, or to refer to any competitive electric refrigeration company's advertising in any way.

Asked first if reports received by the company from distributors and dealers in regard to competition came directly to his attention, Mr. Pierce replied that they did, and stated that they were brought in at monthly meetings conducted by the company's field men who contacted its distributors.

That reports had been received from both the distributors and dealers regarding competition set up by the distribution of the booklet, and by newspaper advertising on Coolerator refrigerators, was stated by Mr. Pierce in answer to further questioning of J. T. Welch, commission trial attorney.

"What particular statements in the booklet were referred to in these reports which you received?" Mr. Welch asked.

"Those which stated that gases formed in foods kept in an electric refrigerator make it dangerous to have an electric box in your home, and statements alleging that human life is endangered due to the refrigerant. Other booklet statements reported to have caused a competitive barrier were those claiming that electric refrigeration dehydrated foods, and that the foods were therefore not fit for use," Mr. Pierce testified.

Asked what effect this competition had had, Mr. Pierce said that such statements made it difficult to sell electric refrigeration since the salesmen had to surmount the competition and had to explain that electric refrigeration was not harmful.

To answer the questions of Respondent Attorney Raber's cross-exami-

nation, Mr. Pierce explained the distributive system of the Frigidaire Corp. stating that the company had 47 distributors or branch offices in the United States, and approximately 7,000 dealers. He also said that 17 of the retail stores were directly owned by Frigidaire, and that the others operated independently.

"When did the first report come to your attention concerning advertising done by the Coolerator Co.," Attorney Raber asked.

"I can't recall exactly, it was sometime last year," the witness replied. He explained that the report had come from the company's distributive organization, and had been turned in by a zone manager.

Testifying that he had received a number of similar reports, Mr. Pierce was asked to estimate the number in figures, and he replied approximately 10 or 15.

"What territory were the complaints reported from?"

"Several different territories, Cleveland, Milwaukee, St. Louis, Kansas City, Dayton, and several others."

Reports were received from both distributors and dealers Mr. Pierce's following testimony related.

Q. None were received from the salesmen themselves?

A. I couldn't answer that.

Q. Did zone managers bring in to you complaints made by people who have your product concerning the way the machine functions.

A. Yes.

Q. How many did you receive in 1935?

A. I don't know.

Asked to estimate the comparative ratio between this sales resistance as against that established by the Coolerator Co.'s advertising, Mr. Pierce replied that the zone managers had reported that service complaints on Frigidaire units were less than ever before.

# Delco motors

Men of experience build Delco Motors. Successful manufacturers of long standing equip their appliances with Delco Motors. Well-informed and alert dealers prefer to sell Delco-powered appliances—and wise buyers select the refrigerator, washer, ironer, oil-burner or air-conditioner that has a Delco Motor. After all, there is no substitute for experience. And of course there is no substitute for the dependable Delco Motor.

DELCO PRODUCTS CORP., DAYTON, OHIO  
In Canada: McKinnon Industries, Ltd., St. Catharines, Ontario





## Bacteriologist Reports Tests on Food Spoilage in Two Electric & One Ice Box at FTC Hearing

(Continued from Page 1, Column 4) and the same water content in the air, what is the relative humidity of the two boxes, Mr. Welch questioned. Dr. Robison answered that it would be the same.

Assuming that the mechanical refrigerator has a lower temperature than the ice, but the air in both has the same moisture content, what is the relative humidity of the two?

A. Relative humidity is higher in lower temperature.

Q. Is that desirable or undesirable?

A. Desirable.

When shown the first paragraph on page 4 of the booklet in question, which stated that natural flavor and value of foodstuffs can be destroyed by cold as well as by heat, Dr. Robison declared the statement untrue.

### Near Freezing Temperature Best

Attorney Welch next asked the witness if the statement, also found in the booklet, that the best temperature for the preservation of foods is 40° to 45° was true. Dr. Robison reiterated his statement that the temperature nearest freezing is the best refrigeration temperature.

Q. Is this also true of leafy foods?

He answered that it was, and that for some types of food such as fruit juices and fish filets, below freezing is desirable.

Commenting on the sentences in the booklet which read: "On the surface of melting ice there is always present a thin film of water. This water prevents the air from becoming dehumidified," Dr. Robison said that in general the first sentence was correct but the second was not, because water is not sufficient to prevent air from being dehumidified.

### Recorders Show Electric Models Kept Better Temperatures

Tests on one ice box, the Coolerator, and two electric refrigerators, General Electric and Norge, all of approximately 5-cu. ft. capacity, were described by the witness. Much of his testimony was made on these tests, which were conducted over a period of 27 days in a room automatically controlled to keep a temperature of 100°. He used the same food from the same lots in equal quantities, and placed the food as near as possible in comparable positions according to a chart drawn up before the tests started.

### Continuous Charts Kept

He testified that he set the electric refrigerator temperature regulators for a 90° temperature room and serviced the ice box with 100 lbs. of ice to start with and with 50 lbs. every second day. The first ice was placed in the ice box when cooling the box down.

During the 27 days of the test, a recorder was kept in all three units to show a continuous temperature and humidity curve.

Questioning revealed that Dr. Robison placed the thermometer in the icebox as near the ice as possible. Mr. Welch asked him if it were placed to get the cold air coming down or the hot air going up.

"As near cold as possible," was Dr. Robison's answer.

Charts were introduced as Exhibit 23 ABC to show the temperature and humidity readings on the Coolerator.

### Report on Ice Box

From noon of the first day until noon of the second day, Dr. Robison described the temperature line as starting at approximately 56°, going down to as low as 52°, continuing at approximately 52° until about three-quarters of the day had passed, gradually rising, and at the time taken out registering about 58°.

The humidity line for the Coolerator, he said, "started at an approximate humidity of 65%, continued quite uniformly at that, dropped toward the end of the day to about 62, so that it was between 60 and 65 during that day."

For another day, Exhibit 23B showed a temperature range for the ice box of from 51° to 58° or 60°, and a humidity range of approximately 70 to 64%.

For Jan. 10, chart C showed 50° to 58° temperatures for the Coolerator with an average of 50° and 53° for three quarters of the time, and a humidity of 70 to 62%.

### Storage of Food Products

Q. During the days you were making this test were the foods in the refrigerators those on the chart? (referring to the food placement chart previously introduced).

A. Yes, but it was in and out. When food spoiled in one box, it was removed from the others too.

The boxes contained the same food quantities, Dr. Robison said, at all times, except for a few endurance contests in which he tried to see how long a certain food would remain in a box without spoiling. He further declared that the chart entered as exhibits for the commission were practically identical with the charts made for the other 24 days of the tests, and that these charts were the ones he had retained as indicative of test results.

### Electric Refrigerator Charts

Temperature charts for the electric refrigerator (No. 3 of those tested) were next examined.

The chart showed that No. 3 varied between 44° down to 38° F., continued on the 40° line, rose to a high of 54°

for a moment then descended to approximately 38° F.

The humidity line started on 42%, gradually rose to 50, descended to 36, then suddenly jumped to 55, then to 58 where it continued for a few hours, dropped to 43, and continued from 43 to 35. In explaining the temperature and humidity lines of this chart, Dr. Robison explained that he did not recall now the reason for the sudden rises in both lines, but pointed out that it was significant that both the humidity and temperature jumped at the same time.

The same unit started on Jan. 9 at 44° F., continued for three-fifths of the period, gradually rose to reach as high as 56° or 58°, and dipped to about 46°. Relative humidity from an initial reading of 47% ran quite constantly at that, then gradually went down to a low of 36, and finished the period at 45.

The third day indicated on the chart showed a temperature of approximately 43°, a gradual rise to 49° and 50°, a small descent, then up to 52°, down again, and a rise to 56°. The humidity on this day hovered slightly below 50%, then went up to 60 and as low as 35. These three charts, Dr. Robison said, were also indicative of the other days of the tests.

### Little Dehydration Difference

"Bearing in mind the temperatures and humidity of Coolerator and the temperature and humidity of the electric refrigerator, what is your opinion of the excess dehydration of food in the electric box as opposed to the dehydration in the ice refrigerator?" Mr. Welch asked.

"My opinion is subject to the determination of fact I made," Dr. Robison stated. "There is very little difference in dehydration. In one instance, it is higher in the electric, and in some others it is higher in the ice box."

He explained that the cause lay in the temperatures; the lower the temperature, the slower the dehydration.

Q. Is dehydration controlled by temperature and humidity?

A. Yes.

### Moisture Loss about Equal For Ice & Electric Boxes

A series of tests showing dehydration losses by weighing the test foods at definite intervals were next discussed, and charts introduced as commission exhibits.

The charts showed the kind of food, whether the container in which they were placed in the refrigerator was open or closed, and the percentage of moisture loss for the three units, (1) ice box, and (2) and (3) electric refrigerators.

### Ground round steak, open container, percentage of moisture loss

(At the end of four days)

|                         |       |
|-------------------------|-------|
| 1-ice box               | 12.8% |
| 2-electric refrigerator | 16.7% |
| 3-electric              | 17.8% |

(Six days)

|            |     |
|------------|-----|
| 1-ice      | 20% |
| 2-electric | 25% |
| 3-electric | 25% |

(Seven days)

|            |       |
|------------|-------|
| 1-ice      | 23.5% |
| 2-electric | 29.7% |
| 3-electric | 29.3% |

Uncooked liver, uncovered container

|            |      |
|------------|------|
| (Two days) |      |
| 1-ice      | 8.9% |
| 2-electric | 9.9% |
| 3-electric | 7.5% |

(Five days)

|            |       |
|------------|-------|
| 1-ice      | 30.2% |
| 2-electric | 28%   |
| 3-electric | 27.9% |

(Seven days)

|            |       |
|------------|-------|
| 1-ice      | 34.7% |
| 2-electric | 30.6% |
| 3-electric | 33.7% |

Uncooked lamb chops, uncovered

|            |      |
|------------|------|
| (One day)  |      |
| 1-ice      | 1.5% |
| 2-electric | 2.1% |
| 3-electric | 2.1% |

(Two days)

|            |      |
|------------|------|
| 1-ice      | 3.5% |
| 2-electric | 5.1% |
| 3-electric | 4.6% |

(Three days)

|            |      |
|------------|------|
| 1-ice      | 5.4% |
| 2-electric | 7%   |
| 3-electric | 5.4% |

(Four days)

|            |       |
|------------|-------|
| 1-ice      | 7.8%  |
| 2-electric | 8.9%  |
| 3-electric | 10.3% |

(Five days)

|            |       |
|------------|-------|
| 1-ice      | 10.2% |
| 2-electric | 10.8% |
| 3-electric | 13.8% |

Celery, covered container

|            |      |
|------------|------|
| (Two days) |      |
| 1-ice      | 0    |
| 2-electric | 2.7% |
| 3-electric | 0    |

(Six days)

|            |      |
|------------|------|
| 1-ice      | 2%   |
| 2-electric | 3.9% |
| 3-electric | 0    |

(Eight days)

|            |      |
|------------|------|
| 1-ice      | 4%   |
| 2-electric | 5.8% |
| 3-electric | 0    |

(Twelve days)

|            |      |
|------------|------|
| 1-ice      | 5%   |
| 2-electric | 8.5% |
| 3-electric | 2.2% |

(Fifteen days)

|            |      |
|------------|------|
| 1-ice      | 8%   |
| 2-electric | 10%  |
| 3-electric | 3.6% |

Celery, uncovered container

|            |     |
|------------|-----|
| (Two days) |     |
| 1-ice      | 10% |
| 2-electric | 16% |
| 3-electric | 11% |

(Six days)

|            |     |
|------------|-----|
| 1-ice      | 23% |
| 2-electric | 35% |
| 3-electric | 27% |

(Eight days)

|            |     |
|------------|-----|
| 1-ice      | 39% |
| 2-electric | 48% |
| 3-electric | 38% |

Mashed potatoes, covered

Moisture loss negligible for two days in all three units.

Mashed potatoes, uncovered

|            |      |
|------------|------|
| (Two days) |      |
| 1-ice      | 8.1% |
| 2-electric | 7%   |
| 3-electric | 10%  |

(Three days)

|            |       |
|------------|-------|
| 1-ice      | 12%   |
| 2-electric | 10.8% |
| 3-electric | 17.2% |

(Four days)

|            |       |
|------------|-------|
| 1-ice      | 16.1% |
| 2-electric | 14.4% |
| 3-electric | 23%   |

Carrots, covered container

|            |      |
|------------|------|
| (Two days) |      |
| 1-ice      | .9%  |
| 2-electric | .7%  |
| 3-electric | .25% |

(Six days)

|            |      |
|------------|------|
| 1-ice      | .6%  |
| 2-electric | .43% |
| 3-electric | 1.9% |

(Eight days)

|            |      |
|------------|------|
| 1-ice      | .6%  |
| 2-electric | .43% |
| 3-electric | 1.9% |

(Nineteen days)

|            |      |
|------------|------|
| 1-ice      | 20%  |
| 2-electric | 7.1% |
| 3-electric | 7%   |

Carrots, uncovered container

|            |       |
|------------|-------|
| (Two days) |       |
| 1-ice      | 10.5% |
| 2-electric | 15.4% |
| 3-electric | 15.3% |

(Six days)

|            |       |
|------------|-------|
| 1-ice      | 37.5% |
| 2-electric | 34.5% |
| 3-electric | 40%   |

### Common Types of Food

At the conclusion of the examination and explanation of the charts, Dr. Robison was asked why he picked those particular foods. He explained that each of the foods was chosen because it was representative of common food types stored in the average refrigerator.

The witness then described the food tests he made in which he determined the bacterial count in each of the foods in the three refrigerators, and where that wasn't possible, scored the foods on the basis of flavor, physical appearance, smell, acidity, and similar criteria.

Cross-questioning by Attorney Raber who objected to Dr. Robison's description of his methods, on the grounds that it was indefinite, revealed that Dr. Robison has had considerable experience testing foods by similar processes where it was not possible to get the bacterial count.

For the foods whose bacterial content could be measured, Dr. Robi-

son said that he used the standard accepted test of taking a gram sample, and examining it.

Covered mashed potatoes at the end of six days

|            |                           |
|------------|---------------------------|
| 1-ice      | 280,000 bacteria per gram |
| 2-electric | 25,200 bacteria per gram  |
| 3-electric | 20,400 bacteria per gram  |

Uncovered mashed potatoes, end of four days

|            |                             |
|------------|-----------------------------|
| 1-ice      | 5,260,000 bacteria per gram |
| 2-electric | 39,000 bacteria per gram    |
| 3-electric | 27,000 bacteria per gram    |

Ground round steak, seven days

|            |                           |
|------------|---------------------------|
| 1-ice      | 110,000 bacteria per gram |
| 2-electric | 21,000 bacteria per gram  |
| 3-electric | 5,000 bacteria per gram   |

Q. How do you account for the wide divergence in bacteria count between the ice box and the iceless refrigerator?

A. The lower temperature in the iceless box.

'Score Sheets' Show Ratings Of Food Stored in 3 Boxes

Score sheets were next introduced at the hearing, which showed the percentage ratings of foods in the three units. The ratings were determined on the basis of bacterial content and physical factors such as described previously.

### Liver

|            |   |
|------------|---|
| 1-ice      | 0, inedible, mold, dark                 |
| 2-electric | 75%, slightly dark, slight odor, edible |
| 3-electric | 75%, slightly dark, no mold, edible     |

### Lamb chops, uncooked

|            |                            |
|------------|----------------------------|
| 1-ice      | 0, inedible                |
| 2-electric | 50%, edible, but not fresh |
| 3-electric | 50%, edible but not fresh  |

### Celery, covered, after 15 days

|            |                              |
|------------|------------------------------|
| 1-ice      | 0, loose, wilted             |
| 2-electric | 50%, slightly wilted, edible |
| 3-electric | 100%, crisp, entirely fresh  |

### Uncovered celery

|            |             |
|------------|-------------|
| 1-ice      | 25%         |
| 2-electric | 0, inedible |
| 3-electric | 25%         |

### Mashed potatoes, covered, six days

|            |            |
|------------|------------|
| 1-ice      | 50%, moldy |
| 2-electric | 90%, fresh |
| 3-electric | 90%, fresh |

### Mashed potatoes, uncovered, four days

|            |     |
|------------|-----|
| 1-ice      | 40% |
| 2-electric | 50% |
| 3-electric | 50% |

### Carrots, covered, six days

|            |                  |
|------------|------------------|
| 1-ice      | 0                |
| 2-electric | 30%              |
| 3-electric | 80%, still fresh |

### Carrots, uncovered, six days

|            |   |
|------------|---|
| 1-ice      | 0 |
| 2-electric | 0 |
| 3-electric | 0 |

Q. As a result of the tests what conclusions did you reach as to the relative ability of the ice refrigerator and mechanical refrigerator to preserve food for household consumption?

A. There is no doubt in my mind of the superiority of the iceless refrigerator.

Charts showing the curves of bacterial growth in raw oysters, condensed milk, fruit salad, canned

(Continued on Page 5, Column 1)



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## Scientist Who Tested Both Electric & Ice Refrigerators Refutes Cooler Claims

(Continued from Page 4, Column 5)  
asparagus, custard, and market milk were the next exhibits entered by Trial Attorney Welch for the commission, to show the lower bacterial growth in the electrical refrigerators as compared with the ice box.

Raw oysters, in open cans, at start of test from 10,000 to 25,000 bacterial colonies per gram.

In ice box (1), during the first two days the bacterial count was lowered from 25,000 to 16,000; the next day it jumped to 1,000,000; on the fourth day to 20,000,000; and on the fifth, 30,000,000 at which time the oysters were spoiled.

In electric refrigerator (2), there were 25,000 to start; for the first two days the bacterial count dropped approximately the same as ice box (1); third day risen to 37,500; fourth to 75,000; sixth to 5,000,000; and tenth to 27,500,000 at which time the oysters were spoiled.

In electric refrigerator (3), the bacterial count rose directly to 54,000 on the second day; on the third to 250,000; on the fourth to 75,000; and on the sixth to 12,500,000.

### Bacterial Counts Shown In Dr. Robison's Tests

Condensed milk, cans punctured at two points, bacterial count at start of test, zero.

(One day)  
1-ice box ..... 6,000  
2-electric ..... 3,000  
3-electric ..... 3,000

(Four days)  
1-ice ..... 8,000  
2-electric ..... 5,000  
3-electric ..... 4,000

(Eight days)  
1-ice ..... 12,500  
2-electric ..... 11,000  
3-electric ..... 9,500

(Nine days)  
1-ice ..... 40,000 spoiled  
2-electric ..... 15,000 edible  
3-electric ..... 12,500 edible

Fruit salad, in open cans, bacterial count at beginning of test, zero

(Two days)  
1-ice ..... 6,000  
2-electric ..... 250  
3-electric ..... 250

(Ten days)  
1-ice ..... 37,500  
2-electric ..... 4,000  
3-electric ..... 2,000

(Nineteen days)  
1-ice ..... 550,000 per gram  
2-electric ..... 100,000 per gram  
3-electric ..... 75,000 per gram

Canned asparagus, open, bacterial count to start, zero.

(Six days)  
1-ice ..... 1,000  
2-electric ..... 500  
3-electric ..... 200

(Twelve days)  
1-ice ..... 10,000,000  
2-electric ..... 1,000,000  
3-electric ..... 100,000

Custard, open container, started at 0 bacterial count.

(Two days)  
1-ice ..... 250,000  
2-electric ..... 2,000  
3-electric ..... 2,000

(Four days)  
1-ice ..... 27,500,000 spoiled  
2-electric ..... 22,000 edible until beyond 8 days  
3-electric ..... 70,000 edible until beyond 9 days

Market milk, bacteria count at beginning of tests 3,000 to 5,000.

(One day)  
1-ice ..... 37,500  
2-electric ..... 15,000  
3-electric ..... 10,000

(Two days)  
1-ice ..... 1,000,000  
2-electric ..... 250,000  
3-electric ..... 500,000

(Four days)  
1-ice ..... 35,000,000  
2-electric ..... 14,000,000  
3-electric ..... 12,000,000

Q. When did the milk first spoil?  
A. The sixth day in Refrigerator No. 1.

### Factors Used to Determine Condition of Food

Following a discussion of the standards by which Dr. Robison determined the food ratings he had given the foods, the witness explained again that where it was possible to determine bacterial growth, the evidence from that determination counted 90% of the total score, but where it was not possible he had used more indeterminate standards such as odor, appearance, color, and taste, all physical factors. Charts showing the zones in which the tested foods were edible were introduced as commission exhibits.

Eggs, for example, were washed and placed in the three refrigerators, where they all kept in Zone "A," or an edible state, for 17 days. At the conclusion of the test the eggs in the various boxes were rated (1) 90%; (2) 80%; and (3) 90%.

For carrots, iceless boxes (2) and (3) had identical curves, and ice box (1) scored differently and a little lower, Dr. Robison said. In the ice

box, the carrots kept for two days, and in iceless refrigerators (2) and (3) they were edible for one and one-third days. They all spoiled on the same day, he stated.

Celery, similarly tested, became inedible at the end of the twelfth day in ice box (1) and electric refrigerator (3); and in electric refrigerator (2), spoiled at the end of the eighth day.

Head lettuce began to deteriorate immediately in ice box (1) and electric refrigerator (2), and at the end of six days had passed out of the prime zone. In electric refrigerator (3), the lettuce passed out of the prime zone in eight days.

### Contents on Ice Box Drip

"At the conclusion of the test did you make any experiments with the drip from the ice refrigerator?" Dr. Robison was asked.

A. Yes.

Q. What did you find?

After 25 days there were 2,576 bacteria per cubic centimeter and 27 moles in the drip, Dr. Robison testified.

In electric refrigerator (2), the chemist said he found, on defrosting, 93 bacterial colonies per cubic centimeter and no moles; and in electric refrigerator (3), 17 bacterial colonies and no moles.

Q. How did you determine that?  
A. By measuring out a gram of water and examining it under a microscope.

### Witness Explains Where Booklet Exaggerated

Attorney Welch next asked Dr. Robison what his opinion was of the question and answer on page 7 of the booklet which reads: "What does this deposit of frost on the coils or brine tank mean? It means that the moisture content of the air in the refrigerator is being sapped up from the air and deposited on the freezing units."

Against Attorney Raber's objection, Dr. Robison was allowed to testify that he believed the answer in the booklet was misleading because the moisture is not "sapped up" but where the moisture strikes the unit, it naturally freezes. Mr. Raber's objection to his opinion on whether the statement indicated a deleterious effect or not, however, was sustained.

### Views on Low Temperature

Dr. Robison also called "untrue" the statement on page 6 of the same exhibit which says that it is not possible to obtain a temperature control of between 45 and 50° in a mechanical or chemical refrigerator without disturbing the natural composition of the air in the refrigerator and the natural composition of the food, because, he said, tests show temperatures below that have been maintained without any bad effects on air or food.

Mr. Welch then established that had Dr. Robison set the refrigerator controls for a room of 100°, which was the actual temperature of the test rooms, instead of at 90°, he could have lowered the temperatures in the electric refrigerators, but could not have changed the temperatures in the ice box.

### 'Refrigerants Not Harmful'

Dr. Robison stated that neither the statement that sulphur dioxide is poisonous, nor the government figures given are correct in the paragraph of the booklet which reads: "The most common gas used for this purpose (electric refrigeration) is sulphur dioxide, which is very poisonous and corrosive. The United States Government figures tell us that this gas is 99 times more powerful as a killing gas than chloroform."

In connection with household refrigerators, the refrigerants named in the booklet are not at all harmful, the witness said.

Another question in the booklet: "What happens when all the moisture content of the air is sapped up?" is answered by: "The moisture is then taken from the food which is kept in the refrigerator. Any chemical or mechanical refrigerator of any make whatsoever will dehydrate food. This means that it takes the moisture, which in most cases is an essential part of the chemical combination of the food in its natural state, out of the food, and therefore defeats the object of refrigeration which is to keep the food in as near a condition to its natural state as possible."

"A mixture of part truth and part error" is the way Dr. Robison described this section. "Any mechanical or chemical refrigerator will take moisture, but so will an ice box," he said. The removal of that water affects not the chemical, but the physical combination of the food.

He also denied the truth of the statement on page 8 of the booklet in which it is declared that it is

(Continued on Page 6, Column 1)

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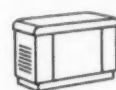
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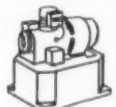
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## Scientist Claims That Electric Units Do Not Form Harmful Gases

(Continued from Page 5, Column 2) impossible to put water back into food. He stated that he had put water back into food so that the food had the same appearance after that it had had before the water was removed.

"The ice-cooled refrigerator is neither too dry nor too moist. It provides the right temperature and does not subtract the humidity or moisture content from the refrigerator or foods when it produces the temperature," was the next booklet statement considered.

Dr. Robison said that the ice box would not be too moist if it were cooler, but it is too moist at its present temperature.

He was then asked to examine the booklet's assertion that "during the process of this decay, there are certain gases formed by action of bacteria on food. The most prominent of these gases are sulphur and chlorine. Both of these gases are poisonous . . ."

### Gases Formed by Bacteria

Not sulphur dioxide and chlorine, but CO<sub>2</sub>, H<sub>2</sub>S, ammonia, and it is his belief, also hydrogen, are given off by bacterial activity.

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Q. To what extent are any gases given off when the temperature of the refrigerator is at 45°?

Very little in the normal refrigerator, and he would even say not at all, was Dr. Robison's answer. He further stated that gases were absorbed to a very slight extent or less than 1%, in contrast to the Coolerator statement, and that the higher the temperature, the lower the absorption.

In refutation of the booklet's statement that the matter in a drain pipe is "nothing more or less than the dissolved gases, together with bacterial growth, and animal and vegetable fats carried from the food to the water on the surface of the ice," Dr. Robison testified that the material in a drain pipe of an ice box contained bacteria, mold, debris from the ice, and a mass of inorganic and organic matter on which bacteria from the air feeds.

### Contents of Ice Box Drain

At this point, Exhibit 30 was introduced and the witness explained that it was the contents of an ice box drain and contained a small amount of iron, a large amount of silicious matter, ice settlement, mold, some hair, and air contamination.

It had been obtained, he stated, from a Bohn refrigerator in his laboratory, serviced by the Detroit City Ice Co., that the ice box had been thoroughly cleaned, and serviced for ice with no food material in it. If allowed to set, that matter, which was largely silica, would jelly, he said.

That ice cubes frozen in a mechanical refrigerator contain the same things that the drain pipe of an ice refrigerator contains Dr. Robison denied, saying that ice cubes could contain nothing more than what the water used contained. "If you put absolutely pure water in an electric refrigerator, you can leave it for a month and it will still be pure," he averred.

### Air Circulation in Refrigerator

Although he declared that he had never tested to make sure, Dr. Robison said he would say "when a mechanical refrigerator starts to run it produces air circulation which carried odors and gases generated by the food into the water in the ice trays" was untrue.

He also testified that air circulation continues in a mechanical refrigerator whether the cycle is on or off in spite of the booklet's statement to the contrary. He drew a distinction, not made in the ice booklet, between the absorption of gases and the absorption of odors by food, saying that either an ice or an electric unit would allow the absorption of food odors by other foods, but that his January tests showed that the absorption was highest in an ice box.

This, he added, while not harmful, is disagreeable.

## Robison Cross-Examined On Methods Used in Testing Foods

"What conclusion did you reach concerning the comparative amounts of dehydration in both an iceless refrigerator and in an ice box, in the tests which you testified about yesterday?" was the opening question which Trial Attorney Welch asked Dr. Robison on Wednesday, last day of the three-day Detroit hearing.

"That there is a little more dehydration in an iceless refrigerator than in an ice box, but that the rate is very slight, and subject to variation," was Dr. Robison's reply.

The cross-examination took as its opening point the time at which tests (on a Coolerator and two mechanical refrigerators) were made by Dr. Robison, the occasion, for whom were they made, why a Coolerator box was chosen, and what instructions the doctor had received before beginning his tests.

### Tests Made for Norge

Started in January and continued through February and March, the tests, Dr. Robison stated, were made for the Norge Corp. He said that he did not know why a Coolerator was chosen for the test, and that while he had received a set of instructions, since part of the test involved matters confidential to the Norge Corp. he had not produced the instructions for the hearing.

The refrigerators were placed in the Robison laboratories the first week in January, although the test was not started until three or four days later, the doctor testified. Room in which the units were placed had a normal room temperature of 70° F., but the temperature tests were not started until the temperature in the room was 100° F.

### Engineers Set Controls

Asked if he personally had set the cold controls on the two mechanical refrigerators used in the test, Dr. Robison answered that he had not; that they were set by Norge engineers in accordance with Nema standards. Chief Engineer Ira H. Reindel of Norge Corp. first contacted Dr. Robison in regard to conducting the tests, he stated.

"Did he tell you what the tests were for," Attorney Raber asked.

"Yes. He said that Norge wanted to determine the efficiency and effectiveness of its product in comparison with the other refrigerators."

Q. Did he tell you that the tests were to be used as testimony in this case?

A. No he did not. He was first asked to testify, Dr. Robison stated, not over two weeks ago.

### Explains Food Placement

Taking the chart showing the arrangement of foods placed in the boxes used in the tests, Attorney Raber asked Dr. Robison if he had made it out, and on which refrigerator interior the design for the chart was based. The doctor replied that he had made it out, and that it was an ideal design, figured to be suitable to any mechanical box arrangement.

Because the construction of the Coolerator differed from that of the two mechanical refrigerators used, there was a slight variation in the exact position in which some of the foods were placed in the refrigerators, the doctor stated. Attorney Raber then questioned the doctor closely as to the food arrangements in each of the boxes.

### Process in Preparing Culture

"When," he asked, "had the food been placed in for the test?"

"About two or three days after the boxes were installed in our laboratory," Dr. Robison said.

Dr. Robison was next asked to explain the process followed in preparing a culture for use in experimental bacterial tests, which he explained.

From this point the doctor was questioned on his testimony given in the direct examination in which he had shown that the bacterial count on ground roundsteak, in the Coolerator refrigerator, at the end of a seven-day period was marked higher in comparison with the two mechanical refrigerators. (Bacterial counts were: ice box, 110,000; electric refrigerator No. 2, 21,000; electric refrigerator No. 3, 5,000.)

Asked as to when, from the bacterial count, the steak would be considered inedible, the doctor said: "I wouldn't want to classify it as unfit for use on a bacterial count, unless the bacterial count were pretty high . . . Ground round steak might be kept in an ice box and still eaten even though it did have a high bacterial count."

Returning again to the question of Dr. Robison's part in choosing the equipment before conducting his tests, Attorney Raber opened the afternoon

## Dulux on Display



Fourteen makes of Dulux-finished refrigerators were displayed on revolving platforms at the Du Pont exhibit during the refrigerator show recently held on the Boardwalk in Atlantic City. Also featured in the exhibit were a series of testing devices, designed to show advantages of the finish, and conferences on household refrigerator problems conducted by Mrs. Elizabeth Macdonald, home refrigeration adviser.

session of his cross-examination by asking the doctor if he had had anything to do with the selection of the ice box used. The doctor answered that he had not, and then qualified his answer, stating that he had asked that a good type of ice box be used in the test.

### Bacterial Counts of Food

Next taking up the bacterial question, the attorney asked the doctor on what type of foods it is impossible to make a bacterial count.

"Well, I wouldn't say that it would be impossible to get bacterial count on any foods, but with some substances it would be impractical to make such a test."

In answering the next question, Dr. Robison explained the difference between mold formation and bacterial growth.

That a hydrator was used in one electric refrigerator, and glass dishes in the other two refrigerators, for storing certain of the foods, the doctor next stated.

Following part of the cross-examination covered the data given in the doctor's testimony as to comparative results obtained. Specifying the bacterial counts recorded for oysters, the respondent's attorney asked what standard was adhered to in determining the time of spoilage.

### Determination of Spoilage

"There is no set standard for this," Dr. Robison replied. "Each bacteriologist determines his own time, that is, there is an element of difference which enters into the question."

Spoilage is first determined by smell and appearance, the doctor explained. "After that, the same culture tested by any bacteriologist, would have the same bacterial count."

Why canned asparagus would remain in edible condition for six days in one electric refrigerator, and eight in the other, was the next query put to the doctor. His reply was that he could not account for it, that there were always variations.

Asked what temperature variances were recorded for the two mechanical boxes during the test, the doctor stated that a variance of approximately 3° F. was shown in each of the electric refrigerators during the test.

Reading from the temperature recording charts, on which variances were shown in the comparative temperatures for 24 hours on box No. 3, the respondent attorney asked the

doctor if he could explain the temperature variances in the two mechanical refrigerators.

His answer was that he did not read that as a variance, that the standard rate of temperature was used as a basis for judgment, not the sudden rises and drops in the temperatures recorded.

In following testimony the doctor was asked if he had made any tests in which the average amount of food normally stored by a housewife was used as the basis for stocking the tested refrigerators with foods. Then he was asked if it was not true that in many homes the food was bought for each day.

Dr. Robison answered that while this is sometimes true, that in a lot of homes the vegetable shopping for the week was done on one day. He added also that it is often found

(Concluded on Page 7, Column 1)

## SCURLOCK KONTANERETTE KITS

### For All Refrigerators

"A flip of the finger and the Kontaner is before you."

MEET COMPETITION . . . SELL YOUR PROSPECT A COMPLETELY EQUIPPED REFRIGERATOR

Kontanerette Kits fit all refrigerator shelves. Every prospect is thrilled with their convenience and economy. They will purchase it eventually . . . why not from you? Don't miss these extra profits. Sell a modern refrigerator.



Retails \$2.75

Seven Kits—price range

Retailing \$2.00 to \$4.95

Peak refrigerator sales—

selling Kontanerette Kits

Saves 30% space over use of old-fashioned round jars.

SCURLOCK KONTANERETTE CORP.

1477 Mdse. Mart - Chicago

## CONDENSERS EVAPORATORS

33 years specialized experience in this field has qualified us to give you intelligent, practical engineering cooperation on both electric refrigeration and air conditioning applications, large and small.

LONG MANUFACTURING DIVISION  
BORG-WARNER CORPORATION  
DETROIT, MICH.  
WINDSOR, CAN.

**LONG**

**Opportunity is Knocking at the Refrigerator Door**

After about five years' service refrigerator door gaskets should be replaced. Tens of thousands of refrigerators are now at the point where new door gaskets are necessary.

Are you getting your share of this profitable business?

You can meet 80% of all replacement needs from the 20 gasket types offered in the simplified Miller line.

Send for your file copy of illustrated price list. There is a demand for this service—meet it with Miller Refrigeration Gaskets. If your local jobber cannot supply you write direct. Miller Rubber Company, Inc., Akron, Ohio, U.S.A.

**IMMEDIATE DELIVERY**

**Miller**

**"Engineers in Rubber"**



## Norge Engineer Explains Purpose of Tests, Kelvinator Advertising Man Tells How Ice Booklet Interfered with Sales

(Concluded from Page 6, Column 5)

Why the tested refrigerators were placed in a room temperature of 100° F., was the next question. The doctor answered that Howard E. Blood, president of Norge, and Mr. Reindel, chief engineer, wanted to know how their refrigerators and other refrigerators performed in high temperatures, and that he had suggested the 100° F. temperature. The fact that in some part of the country the temperature frequently was in this neighborhood, also affected his choice of this specific temperature, he added.

Bacterial counts obtained on first, the test of the drip from the iceless box, and secondly, the two electric boxes, was next subject of cross-examination. Dr. Robison repeated his testimony that the bacterial count of the iceless box showed that there were 2,576 bacteria per cubic centimeter, and 21 molds; while in electric box No. 2 there were 93 bacteria colonies and in box No. 3, there were 17. This testimony completed the cross-examination.

"You testified, doctor, that you had nothing to do with setting the controls on the mechanical refrigerators in the test, did you not?" asked Trial Attorney Welch in his re-direct examination.

"That is correct," he answered. Trial Examiner Keenan then asked Dr. Robison to identify the model Coolerator, from examining a copy of the Coolerator Co.'s booklet showing its complete line of ice boxes. After he had done this, the examiner asked if taking part of the liquid (in testing such substances as canned peas, asparagus, etc.) was the standard method for testing these substances. Dr. Robison replied that it was.

Referring to the witness' testimony on the edibility of foods, the examiner then asked if it were not true that from the very fact that there were bacteria present in a substance means that decomposition has begun to set in.

That this is not judged from the mere fact of the bacteria's presence, but from the rate of its growth, was the content of the chemist's answer. Following questions related to whether or not the bacteria found in market milk were comparable with those found in meats. To which the doctor replied that some of the bacteria might be similar.

Q. Is there any passage of ammonia gas, or of any gas from the ice in an ice refrigerator?

A. I have found a taint of ammonia in ice manufactured by the ammonia process, but in the way ice is ordinarily manufactured, I would say there is not.

### Potter Explains Setting Of Controls on Units

Queried as to what positions he held with the Norge Corp. at the time that Dr. Robison made the tests for it, Ralph R. Potter, next witness called to the stand, stated that at that time he was assistant to the president at Norge Corp.

Refrigerators chosen for the test were a Norge 6-cu. ft. model, a G-E model which was a little over 5 cu. ft. in size, and a J-7, 5.7-cu. ft. Coolerator, he explained.

Q. Why was the Coolerator refrigerator chosen?

A. Because we considered it as being probably as good an example of ice refrigerator as we could get.

The Coolerator was purchased from the J. L. Hudson Co. during the last week in December, Potter testified.

Q. What temperature setting was used in preparing the Norge refrigerator for the test?

A. I discussed that with Mr. Reindel and we decided to use the control which would give a 43° F. temperature in a 90° F. room temperature. This would be between positions two and three on our temperature range.

Attorney Raber then objected to direct examination of the witness as to the exact setting of the temperature controls on the boxes tested, since Mr. Potter had stated that he was assistant to the president, and had given no proof that he had an engineering background from which to answer the questions.

Q. What is your present position

at Norge Corp., Attorney Welch asked the witness.

A. I am assistant director of engineering.

The objection was then overruled, and the commission attorney asked the witness what settings were made on the cold controls of the two mechanical refrigerators used in the tests.

He answered that the cold control was set so that a box temperature of 43° would be maintained at a room temperature of 90° F., and that on the General Electric box, the control had been set about two-thirds away from the coldest position, to obtain a similar temperature to that in the Norge refrigerator used in the test.

Mr. Potter was then turned over to Attorney Raber for cross-examination.

Q. What was the occasion for making the tests mentioned by Dr. Robison in his testimony?

A. To find the effect of our refrigerator, as compared with others, in preserving foods.

Q. Why was it necessary to use an ice refrigerator?

A. It wasn't.

Q. Will you please explain how a test on an ice box could contribute to your survey of food preservation in mechanical boxes.

The witness stated that the Norge Corp. had heard that the J. L. Hudson Co. was selling a large number of Coolerator refrigerators, and there were certain claims about the refrigerator's food preservation properties which they wished to test and compare with those for their own refrigerators.

Q. Were you concerned in using the facts disclosed in this investigation, in this case?

"In the Federal Trade Commission investigation?" the witness asked.

"Yes," Attorney Raber answered.

"No sir," Mr. Potter testified.

The witness was then asked how the Norge engineers who set the controls on the mechanical units tested, determined the cold control setting on the General Electric refrigerator. He stated that the refrigerator was placed in a room and adjusted until the temperature desired was obtained.

### Jeffrey Tells of Dealers Protests to Ice Booklet

Walter Jeffrey, domestic advertising and sales promotion manager, Kelvinator Corp., was the last witness called to testify in the Detroit hearing. After stating his position, Mr. Jeffrey was asked to explain briefly how he was connected with the Kelvinator distribution organization.

"Mr. Jeffrey, what occasion, if any, have you received reports from your distributor and dealer sales organization on any competition on the part of the Coolerator Co. on assertions contained in the booklet, 'Why Ice Is Best for Refrigeration?'" asked Attorney Welch.

On the objection from Mr. Raber as to Mr. Welch's phrasing of the question, he modified it so that Mr. Jeffrey's answer would be based on actual reports which he had received.

"Yes we have," Mr. Jeffrey answered.

Mr. Jeffrey explained that Kelvinator dealt principally through its distributors, and had no direct contact with the dealers other than through meeting them at conventions and meetings, or through contacting them in the field, or through letters written by the dealers into the Kelvinator factory.

He stated that they had received a number of these letters from dealers referring to the booklet, and testified that he recalled particularly letters received from the company's southern sales territory, specifying the North and South Carolinas, Kansas City, Indianapolis, etc. These were received during the summer of 1935, he added.

Mr. Jeffrey testified that the booklet has been sent in, in dealer letters, with statements that salesmen had picked them up (given them from customers), and commenting that it was bad competition.

Q. What, if any, did they report as to the effect of this competition?

A. They reported that the booklet had interfered with their sales.

Mr. Jeffrey said that to his knowledge he had received approximately 50 such reports from dealers.

## Morris Elected Head Of Washington Board of Trade

WASHINGTON, D. C.—Edgar Morris, president of Edgar Morris Sales Co., local distributor for Westinghouse refrigerators, was recently elected president of the Washington Board of Trade, one of the largest trade organizations in the United States.

Out of the 31 past presidents of the board, 15 have been natives of Washington. Mr. Morris is a native of South Carolina, and was a former student at Clemson College.

He is also director of the Columbia National Bank, director of the Security Finance Corp., former chairman of the United States Jury Commission, past president of the Washington Kiwanis Club, and vice president of the South Carolina Society of Washington.

### 10 Dealers Cooperate in New London Show

NEW LONDON, Conn. — Nine makes of refrigerators were exhibited by 10 dealers at an electric refrigeration show held in the ballroom of the Mohican hotel here July 10 and 11, under auspices of the Business and Professional Women's Club.

Exhibitors included: Bruce Electric Co., Fairbanks-Morse; General Appliance Co., Crosley; Gilbert Furniture Co., Leonard; Modern Electric Co., Kelvinator; Modern Home Utilities, Inc., General Electric; New London Lighting Fixture Co., Frigidaire; Plaut-Cadden Co., Universal; Spicer Ice & Coal Co., Stewart-Warner; and The Connecticut Power Co., utility, Frigidaire.

## Pollock Made Officer Of Merriam, Inc.

SCHENECTADY—A. O. Linzey, director, secretary and treasurer of A. Wayne Merriam, Inc., General Electric distributor, recently resigned and is being replaced as secretary-treasurer by F. A. Pollock, former accountant for the distributorship, and at one time with the G-E Co. auditing department, Mr. Merriam reports.

Taking Mr. Linzey's place as director will be B. W. Stryker, product and commercial manager. He was formerly with the General Electric Co. here in the Contract Service Department, then with A. Wayne Merriam, Inc. when that company was a Packard automobile distributor.

A new office, that of finance supervisor, will be filled by W. M. Squires, Mr. Merriam announced. Formerly with General Contract Purchase Corp., and more recently with General Electric Contracts Corp. as manager of the Cleveland office, Mr. Squire had, within the last few months, been advanced to the position of district supervisor.

### Home Demonstrations Make 15 Sales in 2 Months

AUGUSTA, Ga.—By leaving refrigerators at homes in the country for a ten-day free trial, Sylvester Dupont of Whitney-McNeill Electric Co. made 15 sales during the past two months.

On his own responsibility, he left the first refrigerator at a home 16 miles out of town, and made the sale at the time of his call-back at the conclusion of the trial. Through that user, the salesman sold two other refrigerators of the same type in the neighborhood.

## Stewart-Warner Offers Non-Recourse Paper To Radio Dealers

CHICAGO—Stewart-Warner Corp. is extending to its radio dealers non-recourse and limited recourse finance plans, in line with the plans given to S-W refrigerator dealers last March.

Under the new arrangement, dealers are relieved of total contingent liability with 100% advance, or relieved of three months' contingent liability with 100% advance.

Like the refrigerator plan, it will be administered through 144 branches of C.I.T. Corp., finance company with whom Stewart-Warner is working in presenting the plan to dealers.

F. A. Hiter, vice president and general sales manager of Stewart-Warner, claims that the company is the first manufacturer to extend such cooperation to radio dealers.

### Utility's Sales Show What Rural Power Means

SAN ANTONIO, Tex.—What rural electrification means to appliance merchandisers in at least one community was demonstrated when salesmen for San Antonio Public Service Co. sold 22 General Electric refrigerators, six ranges, four 1½-hp. compressors and one ¾-hp. compressor for milk cooling, six radios, and four washers to 22 families on a six-mile line recently run out of La Costo.

The sales were the result of efforts by Charles D. Grieder, merchandise manager of the South Texas department of San Antonio Public Service Co., and Fred Staehle, division manager for Electric Household Appliances, Inc., Dallas.

# ANACONDA COPPER REFRIGERATOR TUBES are Unusually SOFT

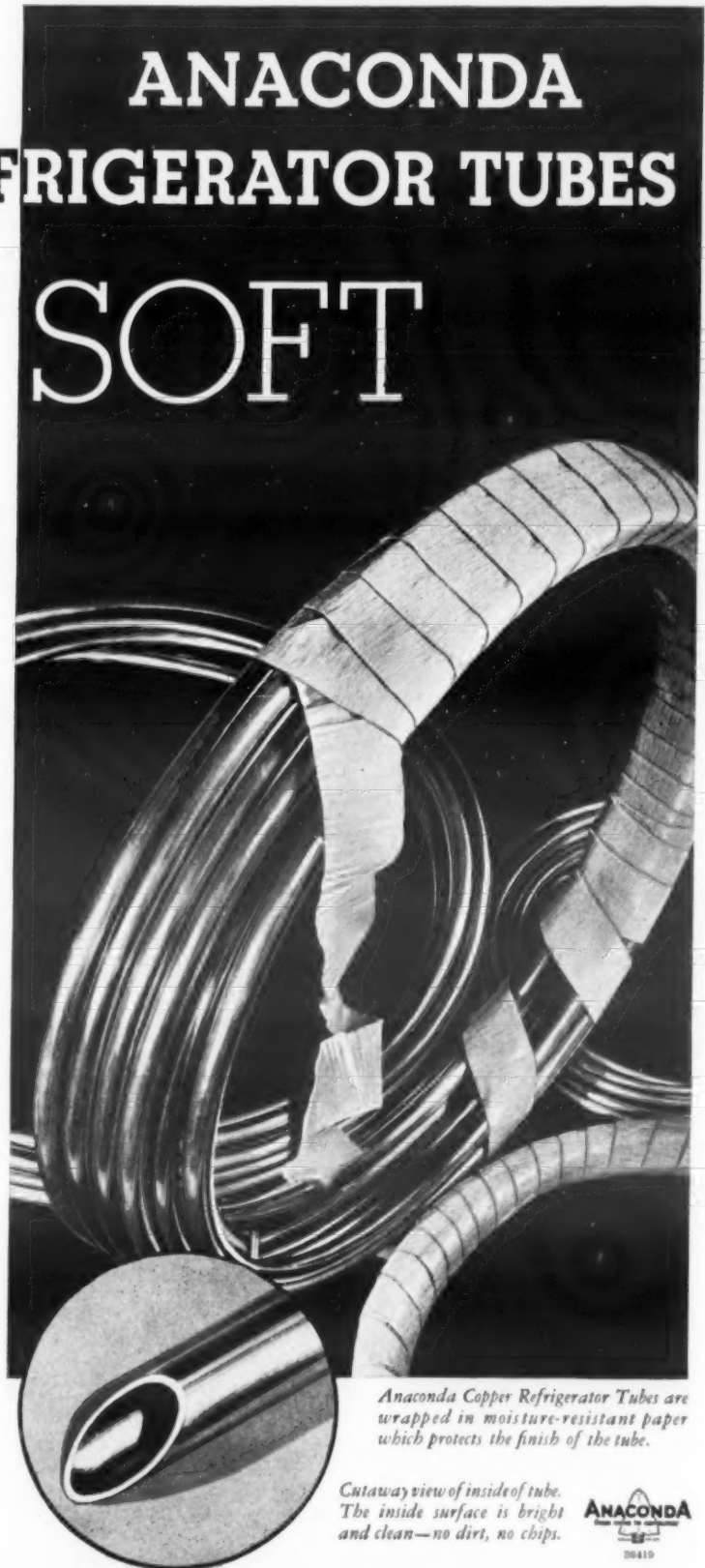
## .... Easy to bend and flare

Anaconda Copper Refrigerator Tubes have exactly the qualities you need to give the best value in installation jobs.

These quality tubes are *exceptionally soft*. They lend themselves to easy bending and may be *flared without cracking*. They are thoroughly dehydrated to free them from moisture on the inside and the ends are sealed to keep them dry. And, even though they are made of 99.9% pure copper, they are specially deoxidized to increase their corrosion-resistance.

Anaconda Copper Refrigerator Tubes are manufactured according to A.S.T.M. specification B68-33 by methods which assure *unusually bright, clean inside surfaces*. They come to you absolutely free from chips and dirt.

Anaconda Copper Refrigerator Tubes meet the leading manufacturers' specifications for tubes to be used in installation work. They are carried in stock by leading Refrigerator Parts Distributors.



Anaconda Copper Refrigerator Tubes are wrapped in moisture-resistant paper which protects the finish of the tube.

Cutaway view of inside of tube. The inside surface is bright and clean—no dirt, no chips.



## COPELAND

*Dependable*

ELECTRIC REFRIGERATION

COPELAND REFRIGERATION CORP. Holden Ave. of Lincoln · DETROIT

## FRENCH SMALL TUBE Branch

THE AMERICAN BRASS COMPANY • General Offices: WATERBURY, CONNECTICUT



## ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office  
Copyright, 1936, Business News Pub. Co.  
Published Every Wednesday by  
BUSINESS NEWS PUBLISHING CO.  
5229 Cass Ave., Detroit, Mich.  
Telephone Columbia 4242  
Cable Address: Cockrell-Detroit

Subscription Rates  
U. S. and Possessions, Canada, and all  
countries in the Pan-American Postal  
Union: \$3.00 per year; 2 years for \$5.00.  
All other Countries: \$5.00 per year.

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VOL. 18, No. 12, SERIAL NO. 383  
JULY 22, 1936

## Highlights of the Coolerator Hearings

**T**HOROUGH-GOING readers of the NEWS have had an opportunity recently to appreciate the advantages of the prompt reporting of important industry news by a weekly newspaper as compared with the slow motion of a monthly magazine.

Even the most casual readers have doubtless sensed that significant information is being divulged at the current hearings of the Federal Trade Commission in connection with its complaint against the Coolerator (ice box) advertising literature.

We would advise readers to make a careful study of the testimony recorded in this and the two previous issues. It is not only interesting, but it contains valuable scientific data presented in understandable and usable form. Furthermore this testimony has been given under judicial conditions where it is subject to challenge.

Back in May the Federal Trade Commission entered a complaint against Coolerator Co. charging that certain statements made in a widely distributed promotion booklet were false and misleading, and ordered that the booklet be put out of circulation, or cause shown why its distribution should not be stopped.

Coolerator chose to fight the order, with the result that starting early in July a series of hearings have been held in rapid-fire order at which the Commission has introduced expert testimony to back up its contentions that many of the claims made for ice and against competitive forms of refrigeration are false and misleading.

### Hearings Are Held in Rapid-Fire Order

Starting the first week of July in Chicago, the hearings moved the following week to Duluth, then to Detroit the early part of last week, and next to Dayton where witnesses were heard last Friday and Saturday. Staff members of the NEWS have covered all of these fast-traveling hearings. Next session is tentatively scheduled for Aug. 10 at Atlanta.

At the opening hearing in Chicago, reported in the July 8 issue of the NEWS, considerable time was spent in establishing the fact that the Coolerator booklet had injured the business of electric refrigerator dealers, and there was considerable confused testimony about Grunow advertising. More important, however, was the

testimony of Dr. Alexander A. Day, head of the department of bacteriology at Northwestern University, and Dr. Gail M. Dack, head of the department of medical bacteriology at the University of Chicago.

### Low Temperatures Required To Retard Bacterial Growth

Questioned as to what temperatures would best retard bacterial growth, Dr. Day declared:

"As far below the optimum as possible." He defined optimum as meaning a temperature between 40 and 45° F.

Asked which was more important—low dehydration, or low bacterial activity, Dr. Day replied:

"Low bacterial activity."

He also testified that if there were excessive dehydration in a refrigerator it would not disturb the natural composition of the foodstuffs, because it would take away only the free water present.

Dr. Dack of the University of Chicago backed up Dr. Day's statement about low temperatures being most important in food preservation, and then gave a surprise bit of testimony by telling how, in testing an electric refrigerator used in the laboratory, it was found that the average temperature maintained was 40° F. with a variation of not more than 1° F.

The next hearing was held the following week in Duluth, headquarters of the Coolerator Co. As brought out in the July 15 issue of the NEWS, practically no effort was made at this hearing to justify, through expert testimony, the claims made for ice refrigeration in the booklet.

The hearing did bring out some very interesting facts about the Coolerator Co. and its rapid growth, the construction of the Coolerator box, and the way in which ice propaganda is broadcast.

On Monday, July 13, the hearings re-opened in Detroit, and through some rapid-fire reporting the full context of the first day's hearings were published in the July 15 issue.

### Detroit Hearing Reveals New Information on Dehydration

Dr. L. A. Philipp, head of Kelvinator's research laboratories and a highly respected expert on matters pertaining to refrigeration, was the only witness examined.

Most significant part of Dr. Philipp's testimony was that in which he explained the scientific basis of the method of determining the rate of dehydration of foods. What he demonstrated was that for the rate of dehydration in a refrigerator held at 40° F. to be equal to that in a refrigerator at 50° F. and 50% relative humidity, the relative humidity of the 40° refrigerator would be only 23%, and that if the relative humidity were higher than 23% the rate of dehydration would be less in the 40° refrigerator.

Thus, with relative humidities in electric refrigerators at 35 to 45%, as he testified was shown in tests, the charge that there is excessive dehydration in electric refrigerators as compared to ice boxes is apparently not grounded on scientific fact.

Dr. Philipp also reported on tests made in Kelvinator's laboratories which showed that temperatures maintained in ice boxes were over 50° F., while the electric refrigerators kept temperatures lower than 45° F. even under extreme conditions.

Most of the remaining time at the Detroit hearing was devoted to the testimony of Dr. Floyd W. Robison, consulting chemist and bacteriologist, which is reported in detail in this issue.

### Statements About Ice Cube Impurities Are Refuted

In one very important part of his testimony Dr. Robison refuted the claims made in the booklet to the effect that the matter in the drain pipe of an ice box consisted of impurities in the air and from foods carried away by the water melted from the ice; and he also charged as being false the claim that ice cubes in an electric refrigerator contain the same type of material.

Dr. Robison produced an exhibit of material taken from the drain pipe of an ice box and showed that it contained a small amount of iron, a large amount of silicious matter, ice settlement, mold, and some hair.

Ice cubes in an electric refrigerator contain nothing more than the water which is put in the trays, he said.

"If you put absolutely pure water in an electric refrigerator, you can leave it for a month and it will still be pure," Dr. Robison testified.

Dr. Robison's testimony also included some very valuable studies on the percentage of water loss in various foods, and the rate of bacterial growth, in electric and ice refrigerators. This data is presented in tabulated form in the story in this issue.

### Testimony at Hearings Educates the Trade

Most recent of the hearings were held last Friday and Saturday at Dayton, and are reported in this issue. Most of the testimony was concerned with tests made by Frigidaire's engineering research department on Coolerator refrigerator, to determine how temperatures and humidities in such a refrigerator compared with those in a Frigidaire. The test procedure and much of the data uncovered is very enlightening.

Also at this hearing experiments were conducted demonstrating the safety of F-114, the refrigerant used in the majority of Frigidaire household models.

Out of these Coolerator hearings has come not only a much-needed education of the trade (and through them, the public) on fundamentals of food preservation through modern refrigeration; but also a warning to manufacturers and distributors that they should not build claims for their equipment on half-baked premises.

It is being made clear in the hearings, we believe, that any claims as to the results to be achieved by a certain product must be able to stand up under the spotlight of quasi-judicial and scientific cross-examination, or to be labeled as false and ridiculous when a showdown is called for.

## Letters

### Reconditioning Business Started in London

Newbilt Limited  
Refrigerators of Repute  
Kelvinator-Frigidaire-Copeland  
And All Leading Makes  
3, 4 & 5 Barrett St.  
London, W. 1.

July 4, 1936.

Dear Sir:

Prior to the recent formation of this company I wrote you using the address of the Coronation Co., Eagle House, 110, Jermyn St., W. 1, which facility was kindly accorded by Mr. Alabaster, a director thereof.

I accordingly received your letter of the 14th April addressed to Eagle House together with a copy of the MASTER SERVICE MANUAL and note a further 50 cents is due.

Enclosed please find Foreign Money Order for £5. (Five Pounds Sterling) which please credit to my account.

When forwarding the volume of REFRIGERATION AND AIR CONDITIONING

## Finest Sights in Paris



George reports that the finest sights in Paris are: The Mona Lisa and Whistler's Mother in the Louvre, the evening chon-chon (dog) parade down the Champs-Elysees, the book stalls on the left bank of the Seine, and the third from the left in the front row of the Folies Bergere. (See picture.)

SPECIFICATIONS on order—which please address to the writer here, will you also forward another copy of the MASTER SERVICE MANUAL.

I subscribed to your interesting paper last year but have not received copies this year due, possibly, to expiration of subscription or change of address which was "Wood Edge," Gerrards Cross, Bucks. Will you, therefore mail weekly copies of ELECTRIC REFRIGERATION NEWS to me at this address and include back copies from Jan. 1, 1936, to current issue.

I understand you have a service to subscribers whereby you obtain catalogs from manufacturers of household and commercial refrigerators and supply to your readers. If this is so will you kindly let me have them as it is essential for this company to build a library of makers' catalogs, past and present if possible.

For your information this company is, I believe, the largest organization in England importing used "as is" household refrigerators from the U.S.A. and rebuilding them "as new." We have a well equipped works with up-to-date plant necessarily imported from the U.S.A. and although business activities were not commenced until the middle of June our orders to date total one hundred and ten household models, most of which have been delivered ex docks, but not to the customer as you may well imagine bearing in mind the short period we have been operating.

As you are no doubt aware, in comparison with your country only a few manufacturers are established here, and the absence of technical data in regard to some of the older types we purchase "as is" is to our disadvantage.

For example, included in our various consignments are about 30 Copeland models which differ in type, and I should be glad to know if you would kindly put an advertisement in your paper asking for a copy of the Copeland Service Manual covering models manufactured by this company during, say, the last six years. I am quite willing that you should pay what you consider reasonable for this manual on my behalf, this payment to be made out of the £5 enclosed. Can you do this please?

We have up-to-date Frigidaire and Kelvinator spare parts and service manuals, but other models we have imported on which we have no technical data are "Challenger," "Majestic," and "ElectrICE." We should therefore appreciate any suggestions and assistance you may be able to contribute to our problem.

Thanking you in anticipation, and wishing your "Live" and interesting paper continued success.

ERIC G. WILLSON, Director.

Answer: The SPECIFICATIONS BOOK, which will soon be ready for delivery, will give you much of the data needed in rebuilding the various models and makes of "as is" refrigerators which you purchase from this country.

We had hoped to have this book out much earlier but it has proved to be an enormous job. The original plans for the book have been considerably broadened and, in addition, we have had difficulty in collecting missing items of data from the manufacturers during the past several weeks because all companies are extremely busy.

Referring to the "Catalog Mailing Service" which was announced earlier this year, we have also been delayed in completing our plans for this service. Many letters from service companies, requesting such catalogs have been published in the NEWS with the result that the names have been picked up by various companies and added to their mailing lists. Thus the publication of the names has given

some measure of the service intended but we have not been able to arrange catalog mailings from this office on a systematic basis. We will complete our plans for this service as soon as possible.

We will see what we can do to obtain a set of Copeland service manuals for you.

### Independent Service In Honolulu

Refrigeration Service & Supply Co.  
Service on All Makes of Machines  
Commercial and Domestic Equipment  
850 South Beretania St.  
Honolulu, T. H.

July 7, 1936.

Gentlemen:

We are writing in regards to question No. 2809 appearing in the June 17 issue. We note that a Manufacturer in Pennsylvania has asked you for names of service companies abroad and that you have listed our name among those in Honolulu. I wish to thank you very much for this courtesy and assure you of our appreciation for this service.

We would like to have the name and address of this manufacturer if it is possible for you to favor us by giving it to us.

We are in an excellent position to render this type of service inasmuch as we are the largest independent service organization in the islands. We do a great deal of work for the Army and Navy, as well as for refrigeration dealers in Honolulu.

H. Z. COLVIN.

### Difficulty in Securing Foreign Exchange

La Grito, Tachira,  
Venezuela, South America  
June 22, 1936.

Editor:

Please renew my subscription to your most valuable paper for another year, to continue my present subscription which is due to expire shortly.

Please also forward me one copy of your MASTER SERVICE MANUAL; and one copy of your Refrigeration Engineers Manual.

The total cost of this combination according to your prices amounts to \$6.50.

The Baltic Shipping Co. of 8-10 Bridge Street, New York; will forward you a check for Ten Dollars (\$10.) to cover this invoice, the balance of \$3.50 please place to credit of my account for further use.

Please also enter my name in your catalog mailing service.

There has been some delay in sending you this renewal order as in these parts it is very difficult to forward money to foreign parts owing to lack banking exchange facilities.

Hoping this reaches you before expiration of my subscription, as I would not like to miss any of your issues, which is my only means of keeping in touch with the refrigeration world, from this edge of civilization.

FRANK DA COSTA,  
Electrical & Refn. Engineer.

### Wishes He Had Subscribed 5 Years Ago

Axtens Refrigeration Service  
106 Wright St., Big Spring, Texas  
July 18, 1936.

Gentlemen:

I am one of the new comers in ELECTRIC REFRIGERATION NEWS. Sure wish I had subscribed five years ago. You can depend on my renewal every year so long as I stay in service work. Please place my name on your mailing list.

A. L. AXTENS.



## Richmond Adds to Water Cooler Line

(Concluded from Page 1, Column 1) department stores and mail order houses.

Airline is now prepared to offer a complete water cooler service, says Mr. Frank, with a line of modernistic water cooler cabinets complete with low sides, ready for installation of high sides for all purposes.

For commercial and industrial purposes, the company is manufacturing a line of water coolers including self-contained units, circulating systems, and multiple systems, with capacities from 2½ to 1,000 gallons per hour.

Spear generators are available for restaurant and large reserve and peak capacity service and internal tube coolers, where capacities up to 1,000 gallons per hour are required. The generators are also useful in air-conditioning work, where water spray air washers are used.

In addition to the equipment which it manufactures, Airline Products offers its clients a complete engineering service and layout work.

The company recently shipped a 600-gallon Spear generator to the Philadelphia Y. M. C. A., in which an installation was made by Mack Machine Co., Philadelphia. A 500-gallon unit was also recently installed by Kell Motor Co. of Wilmington, Del., in a bottling plant in that city.

## Heat Wave Extends Season, G-E Salesmanager Reports

(Concluded from Page 1, Column 2) hesitated to make a decision, have been turned into purchasers as a result of the heat wave," he says.

"In Detroit and certain other cities, distributors had a number of electric refrigerators in homes of prospects on trial. Salesmen called back during the extreme hot weather and in 90% of the cases were able to close the sale with one call. The trial period during the hot weather had convinced the prospects that they needed the refrigerators and they would not consider having them taken out of their kitchens even after a short period of trial.

"Sales are rising among the lower income groups and the hot weather, no doubt, has been responsible for many of these sales."

One of the most unusual sales recently was that of three General Electric refrigerators, purchased by Transportes Aereos Central Americanos, for the company's restaurant at the Tegucigalpa, Honduras, airport. The company purchased three airplanes in the United States and sent pilots to Cleveland to fly the planes back to Honduras. Each plane carried one General Electric refrigerator.

## AIRLINE PRODUCTS... MODERN WATER COOLERS

- 3 to 1000 Gallons per Hour
- Cabinets Complete with Lowsides
- Spear Ice Water Generators
- Efficient Internal Tube Coolers

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# CURTIS

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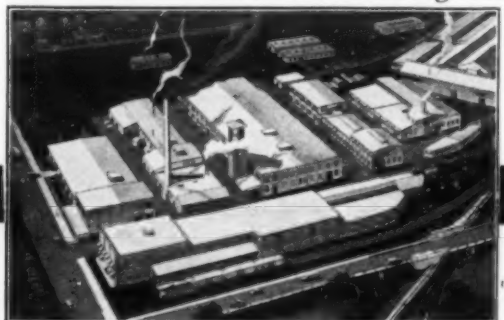
Fair Policy — 82 Years' Successful Merchandising

Quality Workmanship — 42 Years' Building Compressors

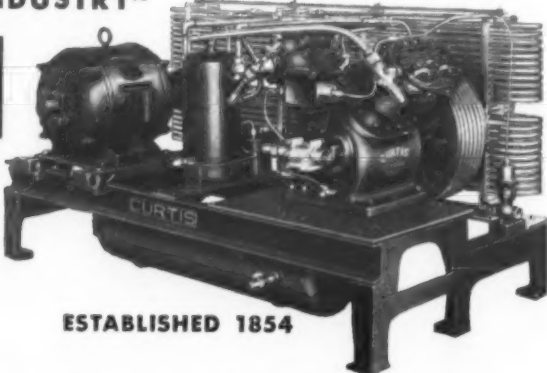
Financial Stability — Aaa Highest Capital & Credit Rating

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Only by Building Permanently on This Complete Combination Can You Secure Sure Profits in This Fast Growing Industry—



Air View of Curtis 20 Acre Plant



ESTABLISHED 1854

Curtis is a well integrated institution, having its own gray iron foundry, brass foundry, machine shop, pattern shop, tool room, electric welding department, structural shop and power plant.

**CURTIS REFRIGERATING MACHINE CO.**

Division of Curtis Manufacturing Co.  
1912 KIENLEN AVENUE • ST. LOUIS, MISSOURI

In Canada:  
**CANADIAN CURTIS REFRIGERATION CO., LTD.**  
20 George St., Hamilton, Ont., Can.

## Rollin Hyde, Pioneer in Finned Surface Field, Dies

(Concluded from Page 1, Column 5) with burial in Holy Sepulchre cemetery.

Holder of a number of patents in the refrigeration field, Mr. Hyde's association with McCord dates from June 1, 1925, when the company took over National Radiator & Mfg. Co., with which he had been associated since 1921.

His work with McCord was chiefly concerned with the sale and development of refrigeration products for both household and commercial use, at first with evaporators and condensers for household refrigerators, and later with commercial coils and air-conditioning equipment.

Before joining National Radiator & Mfg. Co. in 1921, Mr. Hyde had been associated with Long Mfg. Co. (automobile radiators), and Saxon Automobile Co., where he had been superintendent. Before he came to Detroit to join Saxon, he had been employed by Omaha Radiator Co., Omaha.

One of the pioneers in the development of the finned tube for refrigeration use, Mr. Hyde's work in this branch of the industry started with development of the spiral finned tube and followed through to the introduction of the continuous finned tube for household refrigeration, as well as the larger finned tubes for commercial refrigeration use.

Another important contribution which he made to the industry was in the development of extended fin surface coils, both for condensing and evaporating.

Important among refrigeration patents held by Mr. Hyde were developments covering evaporators, a double tube, and a half-round tube, the last two with spiral fin surface exteriors.

## Rucks Made General Mgr. of Tagliabue Mfg. Co.

BROOKLYN—A. F. Rucks, associated with the Tagliabue Mfg. Co., manufacturer of refrigeration controls and recording instruments, for 23 years, was recently named general manager of the company.

Appointment of W. C. Bennett as general sales manager in charge of the eastern territories, and E. D. Wacker as general sales manager in charge of western territories, was also announced.

## Camden Airtemp Dealer

CAMDEN, N. J.—J. F. Crawford, Inc., located in the Savar Theater building here, has been named dealer in this territory for Chrysler Airtemp air-conditioning equipment.

## League Exhibit at Cleveland



Visitors to the Great Lakes Exposition at Cleveland will see this model kitchen sponsored by the Electrical League of Cleveland. Ralph H. Jones, league secretary, H. H. Kennedy, Cleveland district manager for Frigidaire, and Mrs. Marguerite Worth, league director of home economics, dedicate the kitchen by tasting some of the frozen delicacies prepared in the special, window-door Frigidaire at the right.

## Hospital Installs Unit Conditioners for Heat Prostration Cases

(Concluded from Page 1, Column 2) tented, said that the order was the result of an emergency condition. The hospital had the benefit of the units only one day and one night during the heat spell because the installation was not made until Monday and the weather break came late Tuesday.

With 215 heat prostration or exhaustion cases from Saturday midnight through Monday at 7 a.m., and of that number, 50 deaths, the especially created heat case ward with its six beds was woefully inadequate, he said, but helped to care for the patients in the most serious condition.

Patients were placed in other ward rooms, on special cots in the corridors, and even on benches, in the sudden hospital overflow. With no decrease in the normal number of accident and indigent cases, the staff treated 668 cases in a 48-hour period.

The units, which Mr. Harris said can be moved from room to room, reduced the temperature of a large ward 15° F. in a few minutes.

Due to the unusual activity and the heat generated by so many persons, normal building temperature was not restored for two days.

By a special appropriation from the City Council, extra nurses were put on duty, but even with the extra help, nurses and internes were working 12 to 18 hours at a stretch, and 18 nurses collapsed under the strain.

Although Mr. Harris declared that expense prohibited plans for further air conditioning of the Receiving Hospital, he did say that unit conditioners in certain portions of the building would be a definite help. Operating rooms, especially, are the hottest rooms in the building and should have some cooling medium, he stated.

## Distributors Named by Fairbanks-Morse For Appliances

INDIANAPOLIS—Four new distributors were recently appointed by the home appliance division of Fairbanks-Morse Co., three to handle radios in central Tennessee, Rhode Island, and New York, and one to distribute the entire F-M line of appliances, including refrigerators, in North Dakota and northwestern Minnesota.

Keith-Simmons Co., Inc. will take over radio distribution for Fairbanks-Morse throughout central Tennessee. Sales activity at Northeastern Radio, Inc., Providence, new distributor for the state of Rhode Island, will be in charge of I. Feldman.

In New York City, General Manager W. Paul Jones announced, York Automotive Distributing Co., under the direction of Nathan Cooper, will take over radio distribution for the company. Distribution of Fairbanks-Morse refrigerators and home laundry equipment will continue to be handled by Bruno-New York, Inc., he said.

Another new distributor, Grant-Dadley Co., will take over the entire line of refrigerators, radios, and home laundry equipment to be distributed in North Dakota and northwestern Minnesota. D. P. Dayde is general manager of the firm.

## Distributors Report on Effect of Drought in Mid-Western States

(Concluded from Page 1, Column 1) possible to provide them with reservations.

"The latter part of the past week I was in upper Wisconsin and the Upper Peninsula of Michigan. Not much in the way of crops is grown in those areas, but there are large paper and pulp mills, and all are going at a high rate, which has revived the logging industry in those areas.

"Wisconsin is the nation's leading dairy state and an excellent farming territory. Rains came in time to save crops and pastures.

"The Maurer-Greusel Co., our Milwaukee distributor, and the Northern Hardware & Supply Co., Menominee, Mich., our distributor in the Upper Peninsula, are both doing a much greater business than they were a year ago.

"In Iowa, The Hieb Distributing Co., Des Moines, is doing a bigger business now than it had all season, and its business is vastly greater than it was a year ago. Iowa will have a good corn crop. Of course, there are some counties that are gone, but crops for the state as a whole will be good. Nebraska, on the other hand, really has been hit hard.

"In Illinois there are sections that have been very badly hit, and others that will have fairly good crops. Rains that have been received and others that are reported on the way with relief from the heat and drought will do much good at this time and will save pastures and much fall produce.

"All of our distributors in central Illinois are doing much more business than they did last year. The Tenk Hardware Co., Quincy; Central Wholesalers, Inc., Springfield; and Hardware Products Co., Sterling, report an improved business.

"Business with every one of our distributors in those states is better than a year ago, with increases running as high as 100%. What is true of radio and refrigeration is also true of other lines of business."

## Crosley Dealers Entertains Prospects with Cruise

NEW ALBANY, Ind.—A free moonlight excursion on the Steamer *Idlewild* was the promotion gift of Clifford Bensinger of Bensinger Furniture Stores of New Albany, Charles-town, and Jeffersonville, Crosley dealers, to more than 1,000 persons recently.

Prizes of a Crosley radio and other merchandise were given away during the evening, Mr. Bensinger reports. Included among the guests on the trip were members of the Crosley-Bensinger ball team, victors in all of the games played this season.

# DURALOY

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ODORLESS... MOISTURE AND ACID RESISTANT, FABRICATED & PREFINISHED

# HERMETEX

Insulation

27 INSULATION VALUE... VERY INEXPENSIVE... WATERPROOF PACK...

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# Around the World

With George F. Taubeneck

## Fabulous India

### — A Land of Feast and Famine

**Note:** Last week Mr. Taubeneck gave his impression of Calcutta. In this issue he tells about his trip across India by train to Bombay. There will be more about Bombay next week, along with a discussion of British Colonial rule and its career opportunities for young Englishmen.

#### Holy Benares

For thousands of years Benares has been the Holy City to devotees of the world's scummiest religion. According to Hindu folklore, Benares was the first land to arise from the Great Flood.

Buddha, whose religion has been masticated and swallowed—but not digested—by the Hindus, preached his first sermon just outside Benares; so it also is the Holy City to the one-fifth of the world's population which is Buddhist.

Benares is crammed with temples, which are famous to non-believers chiefly for their pornographic sculpture. Most famous is the Golden Temple. Mohammedans have their shrine, too, the twin-minaretted Mosque of Aurangzeb.

Most interesting are the Bathing Ghats along the Ganges, the waters of which have inexplicable curative properties. Here come pilgrims from all parts of India, chiefly the diseased, the crippled, and the dying. They all bathe together in this filthy stream, which is so putrid that even germs can't live in it. (This is true. Samples of the Ganges river water kill germ life in laboratory tests.)

As they bathe they recite prayers, make mystic posture, and otherwise worship according to their lights (or darkness).

No matter how wicked a Hindu has been, if he dies in Benares he believes he will secure everlasting salvation; so relatives bring one-foot-in-the-grave ailing ones there from all parts of the country. If they stubbornly cling to life, the relatives sometimes get impatient, and push their heads underneath the water until they do die. (I didn't see any drownings—just heard about them.)

As a result of all this superstition, Benares seems populated chiefly by the lame, the halt, and the blind—also beggars. It is a great place to "catch" anything and everything.

To the scholar, the various stupas, shrines, temples, sex-depicting friezes, bathing and burning ghats, spires, domes, and rainbow-hued palaces, have endless fascination. But most travelers, having seen them once, wouldn't give three cents to see them again.

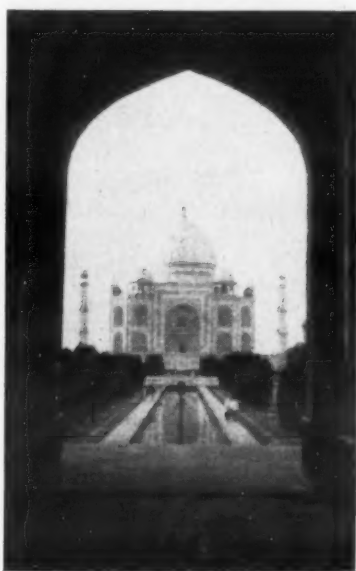
#### More Dust

The trip from Benares to Agra, made in the blazing heat (station thermometers showed 115 to 119° F. in the shade) of an Indian summer (which isn't at all like an American "Indian Summer") afternoon was undoubtedly the most uncomfortable experience of my life.

Worse than the heat was the dust, which clogged nostrils, mouth, eyes, and pores, and which turned breathing into gasping.

On this train the second class compartment had the seats running crosswise. At almost every station the other occupants changed. One old Mohammedan merchant was amazed

#### The Taj Mahal



The majestic beauty of the Taj Mahal, seen through the gateway. George Taubeneck says this was one of the most impressive sights on his journey.

at my freckles. He had never seen this white-race phenomenon before; and through his son, who could speak a little English, asked me if I painted them on! Another interesting occupant was a Standard Oil traveling man (Mohammedan), who received sales reports at every station.

For a portion of the trip an Indian prince was in the compartment, along with a litter of Great Dane puppies, which decidedly were not housebroken. The pups were cute, all right, but the mess they made of that compartment was the last straw in a day of horrors.

#### Taj Mahal

After the torturous heat and humidity and dust which made such a hell out of the afternoon's ride from Benares to Agra, the sudden sight of the Taj Mahal in the distance—one caught glimpses of its glistening purity through snatches of space between boxcars—was like the mirage of an oasis to parched desert travelers. Indeed, it didn't seem real at all.

From the railroad station to the hotel we passed through the most miserable, squalid native bazaar I ever expect to see. Safely through the narrow streets of dust and filth, and checked into a low, rambling, rectangular tropical hotel, I had a long, thrilling shower, and a bottle of cold beer. These were like heaven to the physical man; but the eyes, the spirit, were to see heaven in a few moments.

Driving out to the park which surrounds the Taj, I recalled that GERTRUDE LAWRENCE had once de-

scribed it as being "just like a biscuit box," and that ALDOUS HUXLEY, whom I have always considered the most discerning writer alive today, was quite disappointed in it, and considered it overrated. What a sap I was to detour into such discomfort just to say I had seen the most famous bit of architecture in the world.

But wait! This red sandstone gateway wasn't half bad. Maybe this would be a good show after all. A priest or monk of some sort met me at the gate, and wordlessly bade me follow him. Up we went, and up some more, finally leaving the spiraling staircases to emerge upon the balcony. There, in front of us, was the Taj Mahal.

Gentlemen, I hope you will bear with me while I relate the fact that this first sight of the Taj Mahal, in the burning gold of a desert sunset, was the nearest approach to the feeling of a spiritual religious experience this poor lump of clay has ever had.

So reverent did I feel, that some sign, some token, some gesture, had to be made. Not knowing what else to do—and not realizing the incongruity of a backslidden Protestant making a Catholic gesture toward a mausoleum built by a Mohammedan mogul for a wife whose life was spent hating and baiting Christians—I clumsily made the sign of the cross on my chest.

It wouldn't be fair for me to attempt to describe the Taj Mahal to you. All of you have seen pictures of it, many of you probably know the romantic stories surrounding its origin, and the frightful suffering of the 20,000 laborers who toiled daily for 17 years on its construction. You have no doubt read of the fine inlays of gold, silver, jewels, and precious materials in its flawless marble, of the intricate mosaics, and the marble lace. But it's the whole, the matchless setting for this priceless gem of man's confection, the manner in which gardens and gates, mirroring pool and avenues of cypress, red sandstone arches, marble dome, minaret sentinels, stone terraces and subdued fountains, which makes this the finest sight in the world.

Later I was to see the Sphinx and the Pyramids, St. Peter's at Rome and St. Mark's in Venice, the cathedrals of Milan and Rome, the architectural triumphs of man from Barcelona to Stockholm, from Paris to Budapest. I had already seen the incredible golden Shwe Dagon pagoda in Burma, the temple of Borobudur in Java, the natural beauties of Arizona and Hawaii, and the South Seas. And I repeat: just outside one of the filthiest towns imaginable stands the noblest sight on earth, the Taj Mahal.

There is a story that Shah Jahan, who caused the erection of this monument to his grievously mourned second wife, Mumtaz-i-Mahal, in the middle of the seventeenth century, intended to build a black Taj, even more imposing, on the commanding eminence of the opposite bank of the Jumna, with a white marble bridge connecting the two mausoleums.

But his four sons, alas, were greedy for the throne and its income. Before he could carry out his plans, they dethroned him, and kept him captive for long years in the Jasmine Tower of the citadel. He was eventually buried alongside his wife in the Taj.

As we sat there absorbed in wordless wonder, as sunset turned into moonrise, we felt thankful for the deplorable (in itself) rebellion of the sons. Magnificent in conception though the Black Taj might have been, its presence would surely have subtracted magic from the one we have. Anything taken away from, or added to, that spectacle of spectacles, would ruin the illusion.

#### Delhi

There are other sights-to-see in and near Agra: the fort, and that pale copy of the Taj Mahal style which is the tomb of Itmad-ud-Dowla. And there's the famous deserted city of Falehpur Sikri, built by the mighty Akbar, my favorite character in all Indian history. He intended it to be the capital of India, and built it on a magnificent scale, accordingly, as one must admit even today. But Akbar, philosopher and seer though he was, neglected to check the water

supply, the poisonous nature of which drove away even the Indians (who assimilate water which lays white men under the sod).

Delhi is not too far from Agra—in fact, is directly on the route to Bombay. There have been at least 12 cities of Delhi, and remains of eight of them are arrayed in juxtaposition, with sharp lines of cleavage.

New Delhi, present Imperial capital of India, dates back only to 1931, and is an example of modern city planning by international experts who were given a free hand. It is imposing, but somehow left me cold.

Fortunately, I arrived there on the

#### Back of Electrolux



J. G. Persson of Vulcan Trading Co., subsidiary of Swedish Match Co., India Electrolux distributor, and C. V. Middleton, Electrolux export manager and a specialist in eastern operations.

day Delhi welcomed its new Viceroy, Lord Linlithgow, amidst a dignified pomp-and-circumstance pageant.

#### Ice Cooler

Between Delhi and Bombay, we tried the Indian Railways' idea of air conditioning. For the equivalent of a few dollars you may rent a metal container and buy a 20-pound block of ice.

Then you close the windows and turn on the fans. The heat was still pretty bad, but the system made conditions vastly more tolerable than those which prevailed between Calcutta and Agra.

Last portion of the journey (distances are great in India) was another night ride. At one junction we stopped for 20 minutes. Pacing up and down the platform, I saw an Indian girl servant leave a first class compartment, where she had no doubt been making up a bed, and move quietly into the tiny third-class servant's compartment at the rear of the car.

The door was open, and the lights were on; but unhesitatingly she made her own bed, got down on her knees, prayed, crossed herself, and counted the beads of her rosary. Obviously a Catholic missionary had converted this dark-eyed lass.

Her devotions completed, she retired forthwith. A few moments later another servant, a teen-age boy wearing a Mohammedan fez, scurried into the little compartment, and took possession of the opposite "berth." Then came a third "bearer" to retire, in what passed for an upper berth, in the same compartment. This servant, though small, appeared to be middle aged. He wore the turban of the Hindu.

Then the train started, and I had to dash for my place. I hope and trust peace and harmony prevailed in this oddly assorted menage.

#### Bombay, India

After the rigors of crossing the parched fastnesses of India, Bombay's elegance was soothing indeed. India, to this traveler, was all feast or famine, tops or bottom, luxuriant or frightfully poor.

The most uncomfortable periods of my life were spent in Indian trains; on the other hand, my room at the Taj Mahal hotel in Bombay was probably the finest I have encountered in several consecutive years of living in hotels.

Moreover, the reception accorded me by Bombay refrigeration interests rivaled even that of Australia.

#### Electrolux Renews

Perhaps the most attention was paid to me by two firms which are just getting started in the refrigeration business in Bombay: Swedish Match Co. (Electrolux), and Ahmed A. Fazlkhoy (Crosley).

Electrolux went into the India market some years ago with its water-cooled model; but withdrew after it was discovered that the varying conditions of Indian water supply worked a measure of havoc with the Electrolux mechanism.

Now, with the air-cooled job, Electrolux is back on the scene again. Officials at Stockholm, sensing that the Indian market is potentially an important one, have sent their crack export man, C. V. MIDDLETON, to Bombay to organize the business.

Mr. Middleton has specialized in Eastern operations, and is a thoroughly capable and efficient man, who understands the Eastern mind, habits, and customs. He is a student of race psychology as well as being an adept refrigeration engineer, and contributed much to my understanding of India and its special contributions.

As Indian distributor for Electrolux, Mr. Middleton has lined up the Swedish Match Co. of Bombay. Through a subsidiary, the Vulcan Trading Co., this financially powerful organization is now setting up local distribution points throughout the Indian Empire.

J. G. PERSSON of the Vulcan Trading Co., an alert, engaging man still in his late twenties, will head the Electrolux sales organization.

Mr. Persson points out that in addition to the profit possibilities in the venture, his company is most concerned about the success of this new branch of the business through patriotism and loyalty. Swedish matches and Electrolux refrigerators and vacuum cleaners are probably the best known Swedish products in other nations.

In addition to several discussions with Messrs. Middleton and Persson, (Continued on Page 11, Column 1)

## On the Streets and Sidewalks of Bombay



Left: A street scene in Bombay, giving an insight into its interesting inhabitants and open-air buildings. Center: Much of the heavy cartage work is done by bullocks, drawing two-wheel wagons. Right: The sleek motor car pulled up to the curb lends a modern touch to this busy Bombay sidewalk scene.

## Companions on the Agra-Delhi Train



Left: A fellow-occupant of George Taubeneck's compartment on "The Frontier Mail" on his trip through India from Agra to Delhi. Right: Another Muslim companion on the Agra-Delhi train eyes the camera suspiciously; the first one is sound asleep.

## A Drink of Water? No, Thanks!



Left: Three very good reasons why the visitor to India doesn't drink a lot of water while he's in the country. This scene was taken at a tap in a railway station. Right: First class compartments on the Delhi-to-Bombay train, "The Frontier Mail."



## Around the World

With George F. Taubeneck

(Continued from Page 10, Column 5)

I lunched with B. A. THORSTENSON and S. SUNGREN, joint managing directors of the Swedish Match Co. Mr. Thorstenson directs sales activities, while Mr. Sundgren heads engineering and production. The latter is also the Swedish consul in Bombay.

Through the good offices of these gentlemen, I enjoyed the privileges of all three of the leading clubs in Bombay. They even dug up a tennis partner, who beat me quite handily.

### The Fazelbhoj Family

An old concern, but new in refrigeration is AHMED A. FAZELBHOJ, Import and Export. This concern is sole distributor in India for Crosley Radio Corp., U. S. L. Battery Co., Miller Rubber Co., Pioneer Rubber Co., Dunlop Rubber Co., and Arcturus Radio Tube Co.—all American manufacturers—and for the Forma Co. (German), Radium Rubber Co. (German), and the Ucometal Co. (Belgian).

The Fazelbhoj organization has been prominent in the rubber business in India for years. FAZEL FAZELBHOJ, a younger brother of Ahmed, assists in the executive management of the firm. He will direct sales of Crosley radios.

Another branch of the family—which is native Indian, and of the Mohammedan faith (Indian merchant princes are generally Mohammedans or Parsees rather than of the Brahmin or Hindu persuasion. This is a most important consideration, as we shall see later)—is dominant in the field of radio and talking pictures in India.

This firm, which is distributor for R. C. A. radios and cinema equipment is interested also in air conditioning, and is studying ELECTRIC REFRIGERATION NEWS—both editorial and advertising columns—closely with a view toward getting into this new business in the near future.

M. A. FAZELBHOJ of this firm questioned me at length in regard to the American air-conditioning situation; and in return, issued me a pass to his Film City, production center for the flourishing Bombay talking picture industry.

It was worth seeing too. In one block of buildings, Film City has available everything required for the complete production of a picture, from the time the scenario is approved up to the last stage when the film is censored in the company's own theater.

Equipment capable of producing a picture comparable to any European or American picture is this company's boast. Two sound stages are available, one with room for six sets, and the other, claimed to be the highest and largest studio in India, large enough for any setting to be erected.

Its recording equipment is the British Acoustic Full Range Recording System with which three microphones can be used at one time. Mobile equipment with provision for three microphones and a separate mixer is available for outdoor work.

Cameras to fit every need are provided and three printing machines which print both sound and picture. If necessary, the printing machines will print superimposed titles. This facility, which is not provided in any other printing laboratory in India, is ideal for those who wish to produce an all-India picture, with superimposed titles in languages other than that in which the pictures are recorded.

### Crosley Plans

A Mohammedan priest was engaged in blessing the new showrooms, which AHMED FAZELBHOJ is readying for the display of Crosley refrigerators, when I arrived for an inspection.

The writer couldn't figure out just what it was the priest was doing, but had no difficulty at all in seeing what results Mr. Fazelbhoj is getting in the reconstruction of the building.

When completed, it will be a showroom which would gladden the heart of POWEL CROSLY, JR.

It will have a lot of glass frontage on a busy thoroughfare, will be well set up and backgrounded, and will be augmented by an electric sign, 15½ feet long and four feet high, bearing the message: "CROSLY—World's Best Refrigerator." The Fazelbhoys are investing considerable money in the promotion of this new product.

When Mr. Fazelbhoj decided he wanted to go into the refrigeration business, he wrote for advice to some of the American firms—rubber and battery manufacturers—whom he was representing in India. These people suggested he subscribe to ELECTRIC REFRIGERATION NEWS, and study the situation through its columns.

This he did, and after a time came to the conclusion that Crosley was the franchise he wanted. The deal was made entirely by correspondence.

(If "Zeke" Carrithers doesn't make capital out of this story, he's missing a bet!)

AHMED and FAZEL FAZELBHOJ, with their families, live together in a charming home in a fashionable Bombay suburb. They took me out for a real Indian dinner one night, and it was quite a treat.

### Reception for GFT

Climaxing the week in Bombay was an afternoon reception "for the Editor of ELECTRIC REFRIGERATION NEWS and Representative of the American Refrigeration and Air Conditioning Industries" given by the Fazelbhoys on the evening of April 23.

To this colorful affair at the Bombay Presidency Radio club (made so by the rich garments and jeweled ornaments of the Indian women) came not only executives of the Bombay refrigeration industry, but representatives of every commercial and industrial field in India.

After the guests had all filed past the receiving line, food was served; and the editor was taken from table to table, to converse with the various dignitaries. It was an unforgettable experience.

The following is the list of men representing various business and professions in Bombay, present with their wives:

Rahimtoola M. Chinoy, Sultan M. Chinoy, and Habib N. Chinoy, Frigidaire & General Motors Corp.; Alimohamed Rahimtoola, Frigidaire service; Mr. Katrak, Frigidaire sales.

J. A. Dooley, and M. C. Mujumdar, International General Electric Co.; A. L. Gilford, Bombay Electric Power House & Refrigeration Hire-Service; Mukhlis H. Tyebji, Electric Power House, in charge of service department; T. R. Struell, Volkart Bros. (Kelvinator).

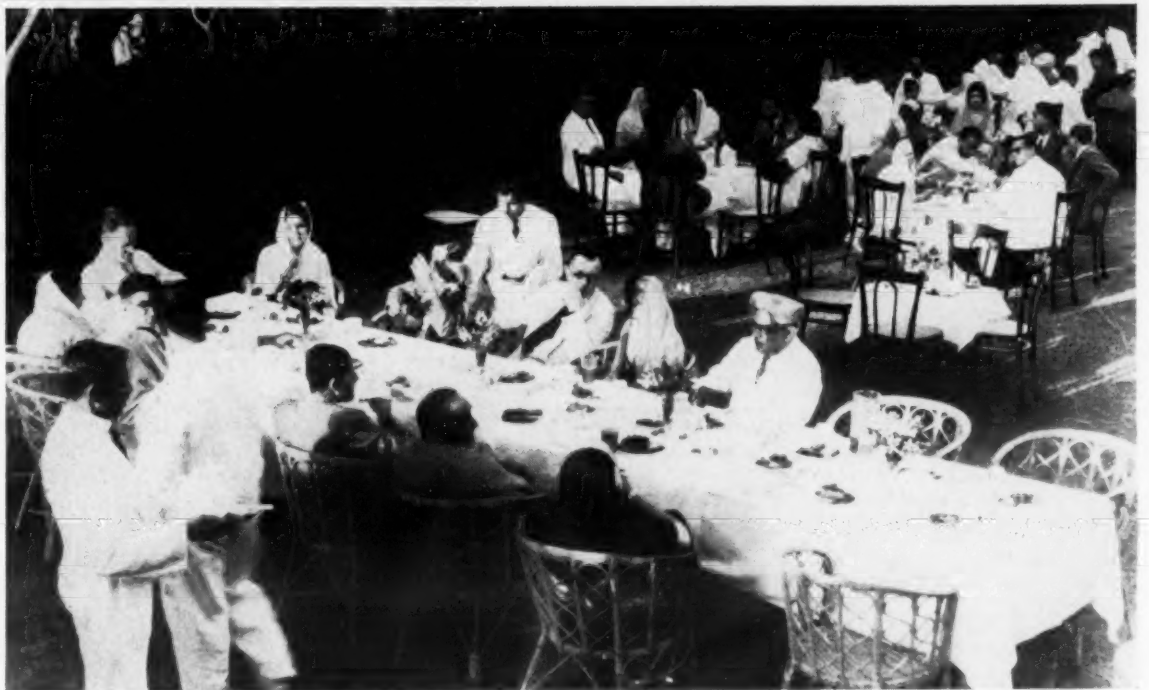
R. M. Prouse and F. S. Barlow, Westinghouse Co.; M. H. Lala, engineer, F. & C. Osler (Serval); Shantilal Shah, Overseas Trading Corp. (Fairbanks-Morse); Gulam Hussin Dossani, film industry.

M. A. Fazelbhoj, Bombay Radio Co.; Fazel A. Fazelbhoj, U. S. L. Batteries; George Azrilenko, American "Z" Corp.; Sultan Nathani; A. M. Thariani, architect and engineer; Roshan Lal, insurance; A. S. Chadwick, insurance; Husein A. Fazelbhoj, insurance; G. S. Dharamsey, insurance; E. G. Currimbhoy, insurance; Suleman Dawoodbhoj, insurance.

Ahmed Nathani, businessman; Ismail Abdullah, businessman; Mahomedali Rajabally, stockbroker; G. M. A. Calcuttawalla, businessman; Rajabally P. Ebrahim, importer; Abbas Huseinbhoj Lalji, businessman; Habib I. Rahimtoola, businessman; Abdullah I. Rahimtoola, businessman; Husein A. Curmall, businessman; Ebrahim Curmall, manufacturer; Gulam Husein Chinoy, businessman.

Jan Mahomed, importer; Gulamali Currimbhoy, businessman; C. J. West, banker; Ismail Mahomed Jaffer, land-

## Bombay's Crosley Distributor Gives a Party for the Editor



The main table and a section of the guests at the party given in honor of George Taubeneck at the Presidency Radio Club, Bombay, on the evening of April 23, by Ahmed A. Fazelbhoj, Crosley distributor in Bombay. Mr. Taubeneck is at the head of the table. At his right are Mrs. Ahmed A. Fazelbhoj, Mr. Fazelbhoj, Mrs. Mody, H. Chinoy, Frigidaire Bombay distributor; Mr. Mody, and Mrs. H. Chinoy. To his left are Mrs. E. G. Currimbhoy, Mr. Prowse and Mr. Barlow of Westinghouse, Mrs. Fazel A. Fazelbhoj, and R. M. Chinoy.

### Electrolux Dealer



Headquarters of Vulcan Trading Co., Electrolux dealership in Bombay. The company is a subsidiary of Swedish Match Co.

holder; Dr. M. E. Merchant, M. O.; Dr. R. V. Sanzgiri, M. R. C. P.; Dr. Abdulla Curmall, M. R. C. P.; Dr. Mahomedali Mistri, M. D., M. R. C. P.

M. N. Chaiwalla, M. H. A. Fazelbhoj, Habib Parpia, Ahmed I. Rahimtoola, lawyers; Adi Patel, journalist. Miss Zarina I. Rahimtoola, Miss Parin Moolji, Mrs. Husein K. Nathani.

### Bombay Garage—and the Maharajah

Another example of Bombay hospitality which will linger long in my memory was a dinner tendered by the Messrs. Chinoy of the Bombay Garage, Frigidaire distributor in Bombay.

F. W. KLATT, managing director of General Motors India, Ltd., and the writer were the only people present who were not native-born members of the Indian race.

All the guests (such as SIR ALI MAHOMED DEHLAVI, Bombay Minister for Local Self-Government, and PRINCE GHANSHYAMSINHJI of Limbdi) were prominent in Indian politics, society, or business. At the dinner, which had umpteen courses of strange and unfathomable foods, the conversation evolved entirely around politics and government—in which several of these men were playing leading roles.

It was very much as if, in America, one were dining with five Senators, nine Representatives, Chief Justice HUGHES, JIM FARLEY, EMIL HURJA, FELIX FRANKFURTER, COL. FRANK KNOX, and AL SMITH. The new Viceroy and the new Constitution, plus the restive labor situation, were cardinal topics.

Among the guests was a real, live Indian prince—the Maharajah of Porbandur, with his wife. He was on hand early, and I discovered that he is not only keenly interested, but well-informed on air-conditioning. He seemed to be a gentleman of high intelligence.

Two of his subjects (lovely Indian women, in saris of amazing sheerness and rich pastel shades—what a feeling for color harmony these Indians have) arrived shortly before dinner, made a sweeping obeisance, and dropped large silver coins at his feet.

The principle by which Indian princes acquire their fabulous wealth, I take it, is something like the Woolworth idea: small contributions

made with great frequency by large numbers of people.

It was a warm, starry night, and the dinner was served on the roof of the Bombay Garage. And boys, that was some roof. It was a tile-and-porcelain mosaic, in rich patterns. Gay Japanese lanterns were strung around, and it was a gala atmosphere.

After the dinner came an Indian cabaret, with authentic Indian music, dances, and costumes. The songs and dances told a running story which, of course, I couldn't figure out.

SULTAN CHINYOY, head man of the Bombay Garage, assigned one of his attractive daughters to me for the show; but she didn't know what was going on, either. Having been educated in England and on the continent, she had a European, rather than an Indian, background.

The Bombay Garage is one of the leading business houses in India. In addition to its big Chevrolet, Vaux-Hall, Delco, and Frigidaire business, it operates a string of gasoline filling

stations, does automobile repair work, and has radio interests.

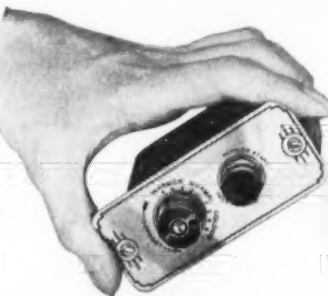
As part of its slogan "Our Watchword Is Service" the company maintains a body repairing and body building workshop and a central service station with all the appliances of modern car-servicing requirements.

Their service stations, Mr. Chinoy told us, are located at strategic points in the City of Bombay and on the way to the Suburbs of Mahin.

The company had its real beginning in 1904, for although in that year it was already doing an extensive business in wheat flour, kerosene oil, liquid fuel, and paraffin wax, it then received the agency for Shell Petrol, which it still sells.

With four branches, in Ahmedabad, Jubbulpore, Nagpur, and Poona, all important centers, and dealers covering the whole of India, Mr. Chinoy calls his organization "the most up-to-date in India."

That it is progressive is illustrated (Concluded on Page 12, Column 1)



## CUTLER-HAMMER REFRIGERATION CONTROL

### For Replacement Service

The dependable C-H Refrigerator Control is now available as a replacement unit. Same control used on popular-make Refrigerators . . . proved by time and service . . . manufactured by the Pioneer Control Company with 50 years of experience.

Easy to install, has the features which bring large-volume replacement business. Keep four models on hand and you are ready for 99% of all domestic calls. Each model mounts horizontally or vertically, fits large or small evaporator-shield openings. Simple connections get job done in a hurry.

NEW MODERN FEATURES. Differential adjustment screw gives whatever cut-in and cut-out temperatures or pressures are wanted; cold-control knob adjusts temperature or pressure range; defrost position; full overload protection to motor, resetting from self-indicating start-stop button. Handsome modern indicator plate in shiny chromium and black.

See your jobber at once. Send for complete new catalog describing this modern replacement control. Also replacement control for beverage coolers, ice cream cabinets and commercial service. Send for the catalog today. CUTLER-HAMMER, Inc., Pioneer Manufacturers of Electric Control Apparatus, 1362 St. Paul Avenue, Milwaukee, Wisconsin.



4 models meet 99% of all domestic calls. Temperature type in 24" and 48" tubes. Pressure type for sulphur dioxide and methyl chloride systems.



Mounts Horizontally or Vertically. Installs easily.

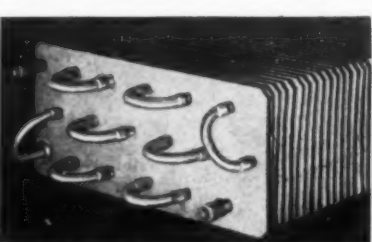
FOR BEVERAGE COOLERS AND ICE CREAM CABINETS

C-H Replacement Control for commercial use offers same big advantages as domestic controls. See catalog for full description.

## 1748 COIL LISTINGS

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WALK-IN COOLERS  
in catalog No. 336

Shallow Fins, High Fins, Wide Coils, Narrow Coils, Short ones or long, many tubes, few tubes—in short, a coil to suit any specific requirement. All copper—fused bond solid fins—electro tin finish.



## TRENTON AUTO RADIATOR WORKS

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## CUTLER-HAMMER

REFRIGERATION CONTROL FOR REPLACEMENT SERVICE



## Around the World

With George F. Taubeneck

(Concluded from Page 11, Column 5)

by the fact that in 1922 the company obtained the representation of the Marconi's Wireless Telegraph Co., Ltd., as their agents for external communications and established the India Radio Telegraph Co., Ltd., for whom the firm acted as secretaries and treasurers—the first Indian company to be entrusted by the government with this public utility service.

Air conditioning, soda fountains, ice cream freezing, milk and beer cooling, cold storage and display counters are included in the Frigidaire equipment sold by Bombay Garage.

Bedford truck, built by Vaux-Hall, a British firm, Albion trucks built in Glasgow, Scotland, and a Chevrolet truck designed and built for tropical service are handled along with the Chevrolet passenger car.

### Sell the Idea

HABIB N. CHINOY, a clean-cut young member of the family who received his engineering training in England, heads the Frigidaire division of the Bombay Garage.

ALIMOHAMED RAHIMTOOLA is the engineering and service manager; and MOHAN T. ADVANI is sales manager.

Mr. Advani has four salesmen in Bombay, working on salary and commission. They get prospects by canvassing through friends and users, and from tips by their service men. The Bombay Garage advertises extensively in newspapers and that helps, too.

Mr. Rahimtoola keeps three field service men at work. Riding motorcycles, they cover a territory radiating 24 miles from headquarters.

More than 3,000 Frigidaire compressors are in use in Bombay and environs. About 500 of these refrigerate bottle coolers and ice cream cabinets.

One air-conditioning installation has been sold (undoubtedly there will be more by the time this is published)—a 1½-hp. job to office of the National City bank in Bombay.

Biggest task, avers HABIB CHINOY, is that of selling the idea of refrigeration. Indians must be educated up to it. Seldom does an electric refrigerator replace ice in Bombay, for ice is little known. Mr. Chinoy estimates that there are probably 50 electric refrigerators in use in Bombay for every icebox.

Four younger members of the Chinoy family have been studying air conditioning assiduously in England and America; and when they get into harness, The Bombay Garage expects to go into the air-conditioning business in earnest.

Picture of these four young men, Ebrahim D. Chipoy, Akbar N. Chinoy, Fazal R. Chinoy, and Fazal D. Chinoy, was published in the March 25 issue of ELECTRIC REFRIGERATION NEWS.

### G-E's for Rent

C. R. PALMER, managing director of International General Electric Co. (India), Ltd., had gone to America before I arrived in Bombay; but people in his office were able to tell me something about the business.

G-E refrigerators have been sold for nine years, with one interruption of two years, in India. Twelve agents in India and Burma (none in Ceylon) work through headquarters in Bombay. One of these, United Eastern Agencies (an Electric Bond and Share property) has agencies in Karachi, Poona, Broach, and Nasik. S. NELSON is manager of refrigeration sales for this concern.

In Bombay I. G. E. of India maintains one commission salesman, who goes after commercial and "flat" (apartment house) business. I. G. E. sells only for cash. If the customer wants to buy on time, he is referred to the Bombay branch of the Commercial Credit Co.

All Monitor Top units are sold on a straight four-year guarantee. Very little service trouble has been experienced, and replacements are few. Most common service call is caused by the controls. In India, service men devoutly wish that all controls were placed on the outside of the cabinet, instead of the inside (for the same reasons reported in the Singapore story).

I. G. E. is just getting started on air conditioning. One small installation (1½-hp., in the Haffkien Institute, for use in serum cultivation) had been made up to the time of the interview.

Most customers for household units go to the Bombay Electric Supply & Tramways Co., Ltd., a privately-owned utility company which rents refrigerators.

After they have been renting refrigerators for awhile, people frequently find that they might as well buy them outright, G-E men find.

Monitor Top sales for the last three years, I was informed, have been running from 500 to 600 units per year.

Although the utility is of great help in getting household refrigerators into homes, some Bombay refrigeration men are of the opinion that it is retarding air-conditioning development. Here's why:

The lighting rate (four annas—9 cents per kilowatt) is charged for air-conditioning operation. In explanation, the utility points out that an air-conditioning system cuts down its electric fan load—which is quite an item in Bombay.

In some cases, however, a large user of electricity (like a theater) can get around this condition because of a prior bulk rate individual contract with the utility.

Still another handicap to air-conditioning progress in India is the fact that in some places it is almost impossible to get water for condenser cooling.

### Leading Factor

By virtue of its rental system—which seems to fit the peculiar needs of a country in which most of the prospects come only for two or three-year periods—the Bombay Electric Supply & Tramways Co., Ltd., is probably the most important factor in household refrigerator sales in Bombay.

A. L. GUILDFORD, in charge of the system, we found to be an alert,

## Main Table at Mr. Fazelbhoys' Party for George



Main table at the party given for George Taubeneck by Ahmed A. Fazelbhoys, Bombay Crosley distributor, at the Presidency Radio Club on April 23. Mr. Taubeneck, at the head of the table, has at his left his host, Mr. Fazelbhoys; Mr. Prowse and Mr. Barlow of Westinghouse, and Mrs. Fazel A. Fazelbhoys. On his right are Mrs. E. G. Currimbhoy, Mrs. Ahmed Fazelbhoys, H. Chinoy of Frigidaire, M. Mody, and Mrs. H. Chinoy.

aggressive Englishman, who leaves nothing undone to build load for his company.

For 14 rupees a month his company will rent an electric refrigerator—any size available—to its customers. This includes all service. Refrigerators must be rented for a minimum of six months. An installation charge of seven rupees, eight annas, is made.

Each year the Bombay Electric Supply Co. buys refrigerators, for rental purposes, from a different distributor. This year Westinghouse was the refrigerator selected. In previous years General Electric, Frigidaire, Kelvinator, and HMV machines were bought.

A few ranges have also been rented by the utility, but the range business has been hard going. Charcoal is the national fuel for cooking in India.

Mr. Guilford's chief complaint against American electric refrigerators is that they are frequently underpowered. For India, he says, oversize motors are needed. His service men have also experienced difficulties with capacitor motors.

In Bombay both d.c. and a.c. (50 cycles) current is supplied. The rate for refrigerators is one anna per kilowatt (about two cents). "Up country" the rate gets up as high as 12 cents per kilowatt. India is entirely served by "private" utilities, most of them generating current by Diesel power.

The Bombay Electric Supply & Tramways Co., Ltd., does a good deal of promotion—newspaper and outdoor advertising—(all its street cars carry promotional banners and placards). Its initials form, rather fortunately, the word BEST; and this device is prominently used in all advertising.

### Ships That Sailed

Romance lingers around the Ballard Estates offices of Volkart Bros., Bombay distributor for Kelvinator. This concern dates back to the early days of British trade with India, to the days of sailing vessels, fights with the Dutch and Portuguese, and unknown risks in the land of the Maharajahs.

Today the company trades in cotton, has textile interests, and goes in for large-scale engineering. R. SCHERER is managing director, T. R. STREALI and P. A. OTTO are leading lights in the company's refrigeration and air-conditioning business.

Household refrigeration business in the Bombay Presidency, say these gentlemen, is so completely in the hands of the Bombay Electric Supply & Tramway Co. that there isn't much point in worrying about it. So they concentrate on commercial business and air conditioning.

In the latter field they go after the "big stuff"—like the dining room of the Taj Mahal hotel (where I had several meals, and concerning which I'm ready to testify that they certainly keep it cold enough) and some of the sets at the film studios.

They have also been looking into quick-freezing possibilities, in conjunction with GEORGE AZRILENKO, a thoroughgoing engineer who is local representative for the "Z" process (invented by M. T. ZAROTSCHEZEFF) of quick freezing.

At lunch with Messrs. Azrilenko and Streali, they told me that the likeliest customer for quick-frozen products would be the colonial army.

In some provinces meat is cheap; in others, expensive. It could be quick frozen in the "cheap" localities, and shipped to army cantonments in the "expensive" places.

Here they run into municipal difficulties, however, as do all concerns which are after any sort of commercial refrigeration business in India.

For example: in Bombay a tax must be paid on every 100 lbs. of meat at the slaughter house. Moreover, that meat must be sold at retail on the same day it is slaughtered. If it remains unsold after 24 hours, it must be thrown away. That's the law. It also helps explain (together with the religious disinclination of the Hindus to kill any animal, why there are so many rats in Bombay, and why they grow to lengths of six and eight inches).

The municipality keeps alive this ancient religious fetish, in this day of scientific food preservation, for long periods of time, because of the added revenue it brings. If meat were refrigerated, much less would be thrown away, much less slaughtered, and hence less revenue from slaughtering.

In selling commercial refrigeration, patient Hindu "educators" must first pave the way by getting the idea of food preservation across to illiterate, religion-dominated, convention-bound, shopkeepers. That is a long and often painful task.

Practically all commercial cabinets used here are built locally, not only because of high freight costs and the tariff, but because Indian engineers claim that American cabinets don't hold up under India's burning climate. Here they are built out of teakwood by Chinese carpenters, and insulated with cork.

According to Messrs Azrilenko and Streali, solid carbon dioxide refrigeration seems to have a promising future in India. Already the Sirdar Carbonic Gas Co. is manufacturing it in Bombay, the Alambic Co. in Baroda, and Spencer & Co. in Madras, Lucknow, and Cawnpore.

At present its chief use is in refrigerating railway cars, but other uses are contemplated.

### Railway Conditioning

R. M. PROWSE, manager, and F. S. BARLOW, sales manager of the Westinghouse Electric Co. of India, Ltd., Feltham House, Graham Road, Ballard Estate, Bombay, sell refrigeration products through the General Electric Co. (India), Ltd.—which is the English G-E, not the American (see our story on Singapore).

These gentlemen are highly interested in promoting railway air conditioning in India.

Nobody could render more heartfelt agreement to the pronouncement that India railway cars need air conditioning than the writer. As I have said before, the most uncomfortable periods of my life were spent traveling on Indian railways in 110° plus temperatures, with the dust so thick breathing was next to impossible.

To them, then, I communicated a little idea of my own. Indian railway cars are divided into first, second, and third class compartments, as in Europe. First class is tremendously expensive, second class about half of first, and third class about half of second, in cost.

Why not, as a starter, condition only the first class compartments,

rather than the entire car? Generally, there's only one to a car, and it occupies about one-sixth of the total space. Already a separate inclosure, it could be insulated and equipped with a unit of adequate capacity at comparatively nominal cost. And anyone who can afford to travel first class—could—and would, gladly—pay still higher first class rates to enjoy the blessings of air-conditioned comfort.

Muller & Phipps (Asia) Ltd. of Nicol Road, Ballard Estate, has long represented Brunner Mfg. Co. in the air compressor business, and is just getting started with commercial refrigeration.

C. F. BRIGGS is manager of the Bombay office. WALTER B. SCHLEITER, manager for India, was in America when I called. R. E. HARDING is sales manager.

This concern also has an office in Calcutta, at Avenue House, Chowringhee Square with H. A. DAWTON in charge. General headquarters is at 1 Park Ave., New York City. Muller & Phipps has the Brunner agency for the Far East, and also has connections with Sparks-Withington and Stewart-Warner.

### Scented Air

Air conditioning has generally been thought of as having six functions, namely: heating, cooling, humidifying, dehumidifying, cleansing, and circulation.

But it has remained for an Indian engineer, H. N. PHERWANI, to add a seventh, perfuming.

For use with his Neo-Aire and Kooler-Aire fans, Mr. Pherwani has blended some 147 different scents to make the air fragrant.

Now please don't laugh. Scenting the air is appreciated by the Indian people, and is something they are willing to pay for.

In addition to his consulting work with the C. & I. Engineering Co. (which has the Williams Oil-O-Matic agency), Mr. Pherwani runs a correspondence school for budding engineers, and is an inventor.

He also made to me the most succinct statement I have ever heard relative to the chief obstacle in the path of the air-conditioning industry:

"Everybody wants air conditioning, but nobody wants to pay for it."

### How's Business?



Ahmed A. Fazelbhoys, Crosley distributor in Bombay, discusses current business conditions with George Taubeneck.

## Interviewing a New Distributor



George Taubeneck (center) learned much about the Indian refrigeration situation in general, and Crosley sales in particular, from conversations with Ahmed A. Fazelbhoys (left) and Fazel A. Fazelbhoys (right).

This picture was taken in front of their Bombay headquarters.



## Air Conditioning

### Rotary Club Keeps Up with Progress



Headquarters of the Chicago Rotary Club (first one to be founded) in the Sherman hotel in Chicago were recently air conditioned by Kroeschell Engineering Corp. The installation was characterized by the utilization of relatively small space for all parts of the installation.

### No. 1 Rotary Club Installs Conditioning In Offices in Sherman Hotel

CHICAGO—Setting an example for hundreds of "service clubs" all over the country, the Chicago Rotary Club No. 1 here, first Rotary club established, recently air conditioned the quarters which it occupies in the Sherman hotel here.

Kroeschell Engineering Co. of Chicago made the installation, which includes conditioning for the general office, directors' room, and secretary's private office.

According to Robert A. "Bob" Kroeschell, vice president of the contracting firm, the installation was particularly difficult because of the limited space available in which to place equipment. The air conditioner, with the blower, had to be specially

designed to fit in a closet 4 feet 6 inches wide by 4 feet deep by 7 feet 5 inches high. Considerable ingenuity was used in concealing all duct work so that it would not detract from the architectural treatment of the various spaces.

The specially designed, vertical type air conditioner is located in a small closet adjoining the general office space. Included in this unit are pre-heating coils, re-heating coils, cooling coils, a spray-type humidifier, and a double set of renewable filters. The supply fan has a capacity of 2,800 c.f.m., and is direct connected to a 1½-hp. variable speed motor.

Refrigeration for cooling purposes is supplied by a Westinghouse direct-

connected RW-282 condensing unit, having a capacity of 8½ tons of refrigeration, installed in the sub-basement of the hotel.

A thermostat located in the conditioned area near the return air grille automatically starts and stops the condensing unit in accordance with room temperature.

A complete system of ducts conveys conditioned air to the entire space. An automatic damper controlled by a thermostat located in the directors' room controls the volume of air supplied to the directors' room. All ducts are concealed and the directional flow supply grilles are decorated to match the color scheme in the various rooms.

An outdoor air connection is provided to supply the required amount of fresh air to the air conditioner. A complete system of recirculation is also included in the installation.

The control panel located in the fan room includes a variable speed starter for the fan motor, a summer and winter transfer switch, and a control switch to position the outdoor air damper to control the quantity of outdoor air introduced to the air conditioner.

This outdoor air damper is also controlled by a switch to open the damper when the fan stops. A thermostat located in the outdoor air duct controls the position of the outdoor air damper from the minimum setting at the panel to the maximum opening of the damper, depending on outdoor air temperatures.

The preheater is controlled by a manually operated steam valve which is turned on during the heating season and left on. The quality of heat obtained from this heater is determined by a face and bypass damper which is thermostatically controlled. The reheater is thermostatically controlled by means of an automatic steam valve.

Humidity is controlled by means of a hygrosat located in the conditioned area near the return air grille.

The following conditions have been consistently maintained, declares Mr. Kroeschell:

1. Summer cooling: a maximum temperature differential of 15°, based on 80° F. inside temperatures with 95° F. outdoor dry bulb reading and/or 75° F. outdoor wet bulb temperature.

2. Dehumidification: relative humidity not exceeding 55% when the outdoor wet bulb temperature does not exceed 75° F.

3. Winter heating: a minimum temperature of 70° F. with outdoor temperatures as low as -10° F.

4. Humidification: a minimum of 40% relative humidity throughout the entire heating season.

### Minneapolis Plans to Condition Hospital

MINNEAPOLIS—After 39 deaths from heat exhaustion or prostration had been recorded in Minneapolis General Hospital during the week-end of the excessive heat wave, Mayor Thomas E. Latimer, as president of the public welfare board, last week asked the city engineer to draw plans for air conditioning the hospital.

Dr. C. E. Remy, superintendent of the hospital, estimated that more than half of the deaths, most of them from the excessive heat, might have been prevented had the building been air conditioned.

It will not be necessary to install the conditioning system throughout the hospital, Dr. Remy said. Conditioning of two floors, he believes, would be sufficient to take care of the patients.

City Engineer Fred T. Paul ordered plans for the job drawn at once, but pointed out that it would be impossible to install air conditioning for use this summer.

### 100 Chicago Buses to Have Air-Conditioning Units

CHICAGO—Air conditioning is a feature of the 100 new buses soon to be put into service by Chicago Motor Coach Co., first one of which was delivered last week.

The coaches are being manufactured by General Motors Truck & Coach Corp., and incorporate features suggested by passengers themselves.

Double-deck, the buses are streamlined, making for smoother, easier riding and are equipped with air-conditioning systems which furnish 10 c.f.m. of fresh air for each of 72 passengers.

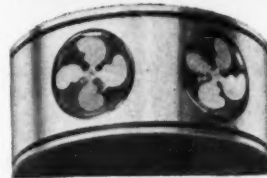
The buses also have an accessible inside starway to the upper deck, just back of the driver's seat; comfortable seats, cushioned with molded sponge cellular rubber, self-ventilating, and covered with gay plaid mohair.

Motor is sealed at the rear of the coach, eliminating gas odors. Lighting is glare-less, and there's a vanity mirror beside every seat, so that women passengers can straighten their hats before getting off.

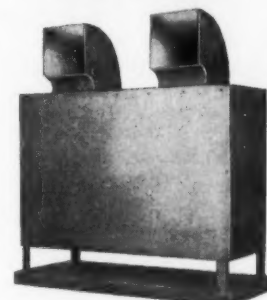
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Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

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Floor Type

Ornamental Comfort Cooler for use in fine offices, shops and homes.

Peerless Standard Fin Coils, with "rifled tubing" and many other exclusive features, are used in all models.

Heavy Duty Air Conditioner for use with duct work. Also available in ceiling type.

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### The CHOICE of SERVICE MEN

## IMPERIAL SERVICE TOOLS

THIS popular line fully meets the demand for higher speed and accuracy required in modern servicing. A well known example is shown on the right. Other sizes for larger tubing.

Order from your jobber. Write also for new catalog 77-E

IMPERIAL BRASS MFG. CO.  
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### Imperial Junior Tube Cutter

Takes all sizes of tubing from 3/16" to 3/4" O.D.  
NO. 127-F  
\$1.25



A clean, quick right-angle cut without flattening tube. Fits into palm of hand.

### 30 MODELS for EXACT and GENERAL REPLACEMENT

-and all are made of STAINLESS STEEL

## RANCOSTAT

Easy to install—and hard to put out of commission! There are many EXACT REPLACEMENTS in the complete Rancostat line of highest-quality thermostats. Ask your jobber for the genuine Rancostat—the Stainless Steel Thermostat.

The Automatic Reclosing Circuit Breaker Co.  
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The Auditorium Patents represent the achievements of the best minds in the air conditioning industry and Auditorium has made all of them available to anyone upon payment of a comparatively small royalty.

In this way the preferable features of any or all of these patents may be combined in any system to produce the best for any particular requirement.

### MORE THAN 25 OF THESE PATENTS HAVE BEEN ISSUED and many applications are pending

And now, because of the increasing demand for these advantages, Auditorium has made arrangements whereby

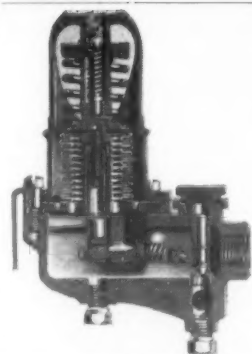
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|---|--|
| AMERICAN BLOWER CORP.,<br>Detroit, Mich.        | J. O. ROSS ENGINEERING CORP.,<br>New York, N. Y.   |
| CARRIER ENGINEERING CORP.,<br>Newark, N. J.     | THE COOLING & AIR CONDITIONING CORP.,<br>(Division of B. F. Sturtevant Co.)<br>Hyde Park Boston, Mass. |
| GENERAL ELECTRIC COMPANY,<br>Schenectady, N. Y. | YORK ICE MACHINERY CORP.,<br>York, Pa.   |

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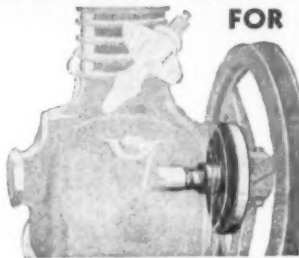
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The valve illustrated—S2V—regardless of range or differential setting opens and closes with a positive snapping action at any previously determined settings which are within its limitations. Exclusive feature is adjustable range of 20° of vacuum to 60 pounds pressure in single valve. Differential is adjustable, varying from 15° of vacuum to approximately 29 pounds at the higher pressure ranges.

Write for Bulletin 17 for full information and detailed drawings.

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### ROTARY SEAL REPLACEMENT UNITS FOR REFRIGERATOR COMPRESSORS



Rotary Seal Replacement Unit installed in a compressor

- QUICKLY AND EASILY INSTALLED
- SAVE TIME AND TROUBLE
- PREVENT SHAFT LEAKS

With the many acknowledged advantages, ROTARY SEAL UNITS are unquestionably the most perfect replacement seal units available.

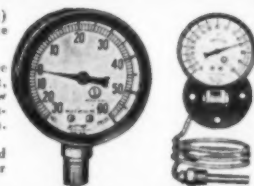
STRONG, ECONOMICAL, SILENT  
GUARANTEED TO GIVE PERFECT SATISFACTION  
**ROTARY SEAL COMPANY**  
801 W. Madison St. Chicago, Ill.

### Refrigeration Instruments by Marsh

MARSH ZERO ADJUSTMENT (patent pending) assures perfect accuracy at every reading of the instrument.

Any instrument fitted with this construction can be calibrated on the job by the service man, in the plant, laboratory or instrument department within a very few minutes without the necessity of dissecting the instrument or gaining access to the interior mechanism.

Manufactured in front zero adjustment as illustrated for stationary service or back zero adjustment for portable service.



**Jas. P. Marsh Corporation**  
2067 SOUTHPORT AVE., CHICAGO, ILL.



## The Buyer's Guide

Special rates apply to this column only.  
Write Advertising Dept. for full information.

SERVICE DOESN'T FALTER WHEN IT COMES FROM HARRY ALTER

WHEN THE TEMPERATURE SOARS—  
DEPEND ON US FOR FAST SERVICE

# REFRIGERATION PARTS and SUPPLIES

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If you are engaged in the business of servicing or selling refrigeration you should have a copy of our new 96 page SUMMER catalog. Write today on your letterhead. We sell to the trade only.

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BRANCH HOUSES

**The HARRY ALTER CO., Inc.**  
MAIN OFFICES 1728 S. Michigan Ave., CHICAGO, ILL.

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Use THIS CATALOG for FASTER SERVICE



Complete stocks of guaranteed dependable parts and accessories for refrigeration and air conditioning—no substitution—"same day shipment"—that's typical Borg Warner service. May we earn the right to all your business by serving you better?

Write for  
Your Copy

BORG WARNER  
SERVICE PARTS CO.

**BORG WARNER SERVICE PARTS CO.**  
Division Borg-Warner Corporation  
2100 Indiana Avenue Chicago, Illinois

# PARTS SUPPLIES TOOLS

Refrigeration &  
Air Conditioning  
COMPLETE STOCK  
QUICK SERVICE

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BIG  
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No matter what parts, supplies or tools you may need for any type of refrigerator or air conditioner, our COMPLETE LINE can meet your requirements promptly. All QUALITY MERCHANDISE. Deal with Airo; you can rely on getting exactly what you order. Airo prices are lowest wholesale prices obtainable. Orders are shipped the same day received. WRITE FOR NEW, COMPLETE CATALOG. It's FREE.

**AIRO SUPPLY COMPANY** 408-10 N. Wells St. Chicago, Ill.

**NOW!**

**HASCO**  
CHANGE-OVER  
FOR 10 MODELS OF  
Frigidaire Compressors

Home Appliance Service Company  
1510 W. Madison Street  
CHICAGO, ILL.

Ready for your use—a new catalog

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**HASCO CHANGE-OVER**

Complete modernization for old compressors. The Change-Over gives new design, new appearance, new economy. Easy to install—no holes to drill—no metal to cut. Sold exclusively by HASCO. Get the details from this new catalog—send for your copy today.

We also stock a complete line of Ultra Precision Parts, backed by the HASCO guarantee of mechanical perfection.

**HOME APPLIANCE SERVICE CO.**  
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# REFRIGERATION-AIR CONDITIONING

PARTS · TOOLS · SUPPLIES

LARGEST STOCKS · WIDEST SELECTION · FASTEST SERVICE

Wholesale Only

OUR CATALOG PROTECTS YOU · SEND FOR IT NOW

133 N. WACKER DRIVE **H. CHANNON CO.** CHICAGO

# GILMER V-Belts

QUIET  
EFFICIENT  
LONG-LIVED

For electric refrigerators, washers, beer pumps, oil burners, compressors, air-conditioning units, etc. . . Gilmer has a V-Belt to fit . . . from the largest stock of moulds in the world. Write for V-Belt catalog.



**L. H. GILMER COMPANY, TACONY, PHILADELPHIA**

## Westinghouse Day To Be July 25 at Great Lakes Fair

CLEVELAND—The Great Lakes Exposition has proclaimed Saturday, July 25, as Westinghouse Golden Jubilee Day in honor of the company's fiftieth birthday this year.

It is expected that the 50,000 regular Saturday attendance will be appreciably increased by the thousands of Westinghouse employees from the nearby plants who will pour in via automobiles and special trains to participate in the celebration. Special rates for transportation and viewing the exhibits have been made available to Westinghouse employees including those from Westinghouse's lighting works, Cleveland; merchandising division, Mansfield; headquarters-plant, East Pittsburgh; Micarta works, Trafford, Pa.; gearing division and renewal parts plant, Pittsburgh; porcelain plant, Derry, Pa.; and transformer works at Sharon, Pa.

In cooperation with the management of the exposition, Westinghouse is staging several attractions for the benefit of people attending on July 25, including a Treasure Hunt. Keys will be given to all visitors as they enter the grounds, and if their particular key opens a padlock on one of the nine treasure chests located throughout the grounds, the person gets the prize inside. Prizes include an electric range, washer, ironer, dishwasher, and combination gifts consisting of several smaller household appliances such as fans, food mixers, electro tray sets, and others.

Visitors not successful in opening a treasure chest still have a chance to include their key stub for the grand drawing in the evening—a Westinghouse refrigerator.

The general committee has also arranged for a parade, a band concert, and a baseball game at the Cleveland stadium.

A simple program will be provided, listing important events and calling attention to the Westinghouse exhibit at the east end of the Hall of Progress, with its air-conditioned theater portraying "Leisure for Living," and complete display of merchandising products, lighting equipment, radio receivers, lamps, and an electric kitchen and laundry.

The Westinghouse general committee in charge of arrangements consists of Lesley C. Paul, H. W. Arlin, J. G. Baird, J. T. Burke, F. G. Hickling, J. E. Hugo, A. H. Jones, W. L. Kettering, and J. Sidway.

## Stern Offers Two Trips To Leading Dealers

HARTFORD, Conn.—Stern & Co., Inc., Grunow refrigerator distributor in this territory, is planning to reward its dealers for their sales work in the late summer and fall with two trips—the first to Yarmouth, Nova Scotia, over Labor Day week-end, and the second to the General Household Utilities Co. plant in Chicago shortly after the first of next year.

Dealers whose sales between July 6 and Aug. 31 qualify them for the Yarmouth boat trip will leave Boston on Friday, Sept. 4, aboard the S. S. Evangeline, returning on Tuesday morning, Sept. 7. Entertainment facilities will be available to dealers and their wives throughout the trip, and several motor tours into the interior have been arranged.

The trip to Chicago on the Deluxe Flyer, dates of which will be announced later, will include rooms at North Shore Athletic Club, tours of Hurley Machine Co. and General Household Utilities Co. plants, and entertainment.

If their sales qualify them, dealers may make both the boat and train trips as guests of the distributor. Those unable to make the Yarmouth boat trip may apply their sales toward the Chicago trip later.

## Advertising Helps Dealer Equal '35 Total in 6 Mos.

LINCOLNTON, Ga.—A large street banner, a giant electric sign, and newspaper and radio advertising have all been used by Robert L. Hogan, Inc., Westinghouse dealer here, to such effect that by July 1 of this year he had reached his 1935 refrigerator sales record.

On the banner is printed, "Westinghouse refrigerators can be owned for 15 cents per day, will save you 50 cents per day in your home, and are backed with five years protection." Below this statement are endorsements by users with their estimates of the savings effected by their refrigerators.

Advertising in the small nearby towns invites prospects to come and visit the store when on a business trip to Lincolnton.

Eight salesmen comprise the Hogan force, four selling refrigerators, and four Westinghouse appliances.

## Vining Urges Training In Fundamentals Of Selling

CHICAGO—"If I can convince the sales force of the merit of my product and get it to back it enthusiastically, I won't care if I never see the buyer—for he'll buy what his salesmen can sell!"

That was the opening salvo with which nearly 300 homefurnishings buyers, guests at a recent luncheon given by the 14th Floor Mart club as a feature of the International Homefurnishings Market in the Merchandise Mart, were greeted by Vernon E. "Sam" Vining, director of department store sales of the Westinghouse Electric & Mfg. Co.

Cloaking his thrusts in the homely phraseology for which he has become noted, Vining urged manufacturers and retailers alike to train their representatives more thoroughly in the fundamentals—outlining their work, teaching pride in salesmanship, and most of all, teaching directness, the basic principle of "ask for the order."

"Everyone knows what a doorbell-pusher thinks about when he's waiting on the front stoop," said Mr. Vining. "The first thing is 'I wish I had a cigarette' and the second is 'I hope no one's at home.' And then when the door opens he unfolds his best baby blue smile and says 'Er-uh, I'm making a survey.'"

"Hell, that's no way to sell! If they want to sell a refrigerator the first thing to ask is 'Lady, have you got a refrigerator?'"

"If she has, the next thing to do is ring the next door bell. If she hasn't the next question is 'Lady, would you like to have a refrigerator?' and if she wouldn't the third thing to say is: 'Why lady, everyone wants a refrigerator, everyone's going to have one someday so you might as well look at mine.'"

"These are the things we have to teach our salesmen. In my opinion no sales meeting is a success unless on the same day you hear your same words repeated verbatim as he tells a customer the merits of your product. Startle them, put your ideas across in the words of the consumer, don't talk technicalities as such, dramatize what the technicalities do."

Closing, said "Sam", is the easiest part of the sales talk. All that's necessary is to ask for the order.

"People want to buy, they want to accumulate things, and the only thing that will stop them is the diffidence or indifference of salesmen."

"In my experience, and I can prove it, 50 to 75% of the people contacted by salesmen don't buy simply because they're not asked to."

"It's difficult for people to say 'no.' Saying 'yes' only requires a nod of the head, but saying 'no' makes the average person use 150 words, during which time you can find out what's troubling him and provide the solution. Make 'em say 'no' three times before you quit, and then give 'em a handful of literature."

## McCord

Refrigeration  
and Air Conditioning  
PRODUCTS

- CONDENSERS
- COMMERCIAL EVAPORATORS
- DOMESTIC EVAPORATORS
- COMFORT COOLERS
- MARKET COOLERS
- AIR CONDITIONING SURFACE
- UNIT HEATERS
- BLAST HEATING SURFACE
- CATALOGS ON REQUEST

**McCord Radiator & Mfg. Co.**  
DETROIT MICH

## Classified

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### EQUIPMENT FOR SALE

GIBSON highside float evaporators, all porcelain, \$6.95 (4 tray). Gibson, Sparton and Trukold seals \$2.35. Cutler-Hammer thermostats (new) \$2.45. Detroit Lubricator thermostatic expansion valve, model No. 673 with flange \$3.95; cut for any size S.A.E. fitting \$4.45. Johnson Motor compressor, direct drive units suitable for Gibson, Majestic, Sparton, Bohn replacements, twin cylinder 7½ inches in height \$14.50. Fully guaranteed (factory rebuilt). Federal 6 cubic ft. 1936 model equipped with new type Westinghouse capacitor motor \$60.00, in original crates. FEDERAL REFRIGERATOR CORP., 57 E. 25th St., New York City.

DEALERS, SERVICEMEN. Used refrigerators "As Is." Recondition, spray them yourself. Frigidaires \$17.00 up. Kelvinators \$12.00 up. Electrolux \$25.00 up; also Copelands, Majestics, Servels, Ice-O-Matics & others. Frigidaire units \$15.00 up; C 1 h.p. \$75.00; Mayflower 1 h.p. unit \$85.00; ½ motors \$4.50. PILGRIM REFRIGERATION CO., 43-47 39th Place, Long Island City, N. Y.

FRIGIDAIRE plain T two temperature valves \$2.50. Mercoild No. 848 controls complete with tube \$5.00. Try Warren for stuck-up compressors. Samples available. Thermostats, float valves, and expansion valves rebuilt. Prompt service. Same day shipment on refrigerant gases. HALECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

FOR SALE. Brand new methyl compressors, both single and twin cylinder, for domestic and commercial jobs up to 25 cubic feet. Also condensers, expansion valves, fittings, ½, ¾, and 1 h.p. General Electric capacitor motors, Bristol recording instruments, etc. All new merchandise, attractively priced for quick disposal. Box 811, Electric Refrigeration News.

FOR SALE 9 Brunner refrigeration compressors, "V" type—Model R-5000—4 cylinder—¾" bore and 2¼" stroke—less drive pulley. These compressors are practically new—used only for display purposes. Priced right for quick sale. Box 810, Electric Refrigeration News.

### REPAIR SERVICE

MAJESTIC UNITS: any model, rebuilt or exchanged \$20.00 f.o.b. Chicago. Guarantee six months. All models in stock for prompt exchange. Wholesale only. REFRIGERATION PRODUCTS, INC., 123 W. Illinois St., Chicago, Ill.

GENERAL ELECTRIC sealed units repaired, exchanged. Work guaranteed. Majestic units rebuilt, exchanged, \$20.00. Satisfied customers in all parts of the United States. Give model when writing. REFRIGERATOR ENGINEERING PARTS & SERVICE CO., 2800 So. Parkway, Chicago, Ill.

MAJESTIC UNITS repaired \$17.50. General Electric units, \$30.00. Send your Majestic units to Ft. Smith and get them fixed right. We positively guarantee that we can make Majestics freeze as fast as when new. PENO SERVICE CO., Ft. Smith, Ark.

SAVE MONEY on electric motor repairs. We rebuild and rewind thousands of motors yearly for largest refrigeration firms in the East and can save you money on your motor problems. Write for our price schedule for rewinding or rebuilding motors for refrigeration, oil burners, washing machines, motor stokers, and air condition motors. Out of town motors are picked up and delivered by our motor transportation service. Write for our dealers' price list. F. J. QUINN'S SONS, INC., 166 Vernon Ave., Long Island City, N. Y.

## MAJESTIC Refrigerator Service Manuals

Special to refrigeration service men and dealers, a limited supply of the latest official Majestic service and instruction manuals.

Manual on Hermetically Sealed Units  
Manual on Standard Units  
Both Books for \$1.50 plus postage  
While quantity lasts.

**I. N. KOENIG**  
2636 Logan Blvd., Chicago

## TEMPRITE INSTANTANEOUS BEER and WATER COOLERS

Detroit Michigan

### Leading Jobbers

Are now agents for Electric Refrigeration News and can supply current issues or take your subscription order. They also have copies of the Master Service Manual in stock for immediate delivery.



## Service Methods

### Data on Manufacturers, Controls, Source of Rice Repair Parts and Welding Rod Is Sought by Service Men

#### Who Entered Refrigeration Manufacturing Field When?

Flushing Refrigeration Co.  
Service—Repairs—Installations  
142-16 Roosevelt Ave.  
Flushing, N. Y.

Editor:

To satisfy and settle a dispute as to who and when, will you please forward the following information?

Who manufactured compressors for Bohn, Trukold, Sparton, and Gibson refrigerators when first introduced to the public? What year? Also, Coldspot.

What year was Grunow first manufactured? What year was the Majestic first manufactured? I understand that there is a job on the market by the name of U. S. Radio & Television. Who was this made by and when. Never saw one, so naturally am anxious to know about it.

E. E. CONDON, Proprietor

Answer: Our files show the following:

The Bohn refrigerator was on the market in 1932 with a compressor manufactured by the Sunbeam Electric Mfg. Co.

Trukold was put out on the market by Montgomery Ward in September of 1931. The compressor was manufactured by the Gibson Electric Refrigerator Corp. through 1933. Since then, Universal Cooler Corp. has been making compressors for Ward.

The Sparton was introduced in January, 1932, and the company manufactures its own condensing unit. Gibson first began manufacturing electric refrigerators in the Spring of 1931 and they have always manufactured their own compressor.

Coldspot was first sold by Sears Roebuck in April of 1930. The Coldspot compressor has always been manufactured by the Sunbeam Electric Mfg. Co.

Grunow refrigerators were first manufactured in 1933; Majestic in the Fall of 1930.

The U. S. Radio & Television Co. manufactured a refrigerator under the name U. S. Hermetic in 1932 and 1933. However, in 1933 the company was merged with the Grunow Co. to form General Household Utilities Corp., present manufacturer of Grunow refrigerators. At that time the manufacture of the U. S. Hermetic was discontinued.

#### Controls Required for Use with Automatic Expansion Valve

2108 Ave. M.  
Brooklyn, N. Y.

Editor:

I had an argument with a friend on the question: will a pressure control work well with an automatic expansion valve or must I have a temperature control. I am a subscriber to your paper.

Answer: This question is properly answered in the MASTER SERVICE MANUAL, page 91, as follows:

"The operating back pressure in the low side of a system using the automatic expansion valve remains constant during the entire cycle, that is, if the valve is adjusted to operate at a certain pressure, for example 6 inches of vacuum which is a common setting when used with SO<sub>2</sub>, the pressure on the low side will remain at 6 inches of vacuum so long as the system is in normal operation and the valve is mechanically correct.

"The pressure does not increase with an increase in evaporator temperature, nor decrease with a decrease in evaporator temperature, as it does with the flooded system. This fact precludes the possibility of employing the low pressure control in a system using the automatic expansion valve as a refrigerant control.

"Inasmuch as the operation of the valve is controlled by the pressure

within the low side of the system, it is impractical to use automatic expansion valves in multiple. The automatic expansion valve is used in single evaporator systems, in conjunction with the thermostatic temperature control.

"During the off cycle, that is, when the compressor is idle, the saturated vapor which was present in the evaporator at the close of the cycle will expand, and the pressure in the evaporator and in the entire low side will increase in proportion to the increase in temperature.

"This increased pressure will tend to hold the valve closed more tightly during the off cycle. When the temperature of the evaporator and the refrigerator has risen sufficiently to affect the thermostatic control, and the compressor starts the on cycle, this increased pressure is drawn to the compressor, reducing the pressure in the low side to the set operating pressure of the expansion valve, at which point the valve opens and starts its regular operation at a continuous set back pressure."

#### Source of Welding Rods For Prest-O-Lite Torches

C. H. Earl Refrigeration Service Co.  
Rebuild—Install—Move—Service  
1103 Garfield Ave.  
Bay City, Mich.

Editor:

Can you give us a source of supply on welding rods that can be used with a Prest-O-Lite torch?

It is similar to brazing and comes in flat strips like metal ribbon. It melts in a little higher heat than solder.

CHAS. H. EARL.

Answer: We believe you have reference to silver solder, and have asked Welding Metal Products Co., who have a new development in such material, to send complete information to you.

#### Location of Rice Co.

Herrick Refrigerator & Cold Storage Company  
Waterloo, Iowa

Editor:

We are in receipt of a letter from a customer of ours who has a Herrick refrigerator equipped with a Rice compressor.

He is in need of repairs for the compressor and has written us regarding location of the Rice Electric Refrigeration Co. The last address we are able to find is Brooklyn, N. Y., but the customer advises they are no longer there.

Will you kindly advise if this company is still in operation and if so, where they are located?

EDWARD N. NORTHEY

Answer: Contact Isaac Rice, Jr., 295 Fifth Ave., New York City, for information on Rice refrigerators and parts.

Service information on Rice compressors is given in the MASTER SERVICE MANUAL.

#### Rather Miss Three Meals

I am a recent graduate of the Refrigeration and Air Conditioning Institute of Chicago, Ill., and have been a reader of the REFRIGERATION NEWS for the last 10 months. I really don't know how anybody in the refrigeration industry can get along without your wonderful magazine. I wouldn't want to miss a copy. I would rather miss three meals than one copy of REFRIGERATION NEWS.

I would appreciate you putting me on your catalog mailing list. Thank you.—Max Kleeman, 2545 N. Howard St., Philadelphia, Pa.

Please change my mailing address to 430 Orchard St., Santa Rosa, Calif. Also please enter my name on your catalog mailing list.—C. L. Badeaux.

## Despatch Bulletins Describes Service Shop Ovens

MINNEAPOLIS—Two new bulletins recently issued by Despatch Oven Co. describe the company's B and C ovens, especially designed and constructed for service stations which specialize in refrigerator repairing, motor repairing, and similar work.

The Despatch C Type ovens, with a 300° F. maximum oven temperature, the bulletin states, are specially recommended for refrigerator distributors, service shops, and electric repair shops. Among the uses the bulletin names for this type are: dehydrating refrigerator units, baking and drying finishes, or baking coils and armatures.

The second type, Despatch B, with a maximum temperature of 400° F., fills the need for smaller and less expensive units for the electric service station, according to the bulletin. They may be used for baking of japans, enamels, and synthetic finishes on various parts as well as for baking coils and armatures.

## York Develops Flexible Charging Connection

YORK, Pa.—York Ice Machinery Corp. has developed a new flexible charging connection for the use of service, installation, and operating engineers who have occasion to charge Freon refrigerating or air-conditioning systems. Outstanding feature claimed for the new device is its easy flexibility, which is said to be an advantage in making temporary connections from a refrigerant cylinder to the refrigerating system.

The new charging connection is 4 ft. long overall, and is made of seamless bronze bellows tubing with a reinforcing armor of heavy bronze wire braid. It is provided with 1/2 inch S.A.E. flared nut connections at each end, with an adaptor fitting for standard size refrigerant cylinders.

Other advantages claimed for this new refrigeration accessory are that it (1) eliminates the need for carrying an ungainly length of copper tubing from one job to another; (2) allows more accurate weighing of refrigerant while charging a system; and (3) facilitates charging in cramped quarters.

## Virginia Smelting Co. Names Dealer in Ottumwa, Ia.

OTTUMWA, Iowa—Virginia Smelting Co. has just announced that J. W. Edgerly & Co. of this city is now handling its brands of sulphur dioxide and methyl chloride.

## Users Listed in Promotion Of G-E Dealer

MONTGOMERY, Ala.—A promotion piece used this year by the Frank Tennille Furniture Co., General Electric dealer here, contains the names of 200 persons to whom the firm has sold refrigerators.

Introductory copy says: "Here is a partial list of the many General Electric refrigerator users. Ask any of them what they think of the G-E refrigerator."

INFORMAL TALK NUMBER 59

## Only a Few R-A-C-I Trained Men Available for Employment

Our sincere thanks to the Refrigeration and Air Conditioning Industry for so quickly discovering the merits of R-A-C-I Trained men and putting them to work. Our graduates are now almost 100 per cent employed.

Additional men are now nearing completion of their training in our shops. Others will be available weekly. These men will have spent more than 800 hours in study at home and 100 hours at work in our Shops in Chicago, learning what you want done—and how to do it—all under the supervision of engineers appointed by your industry.

They are trained for dependable installation and service work—exactly as you want them trained. Write for details.

The REFRIGERATION AND AIR CONDITIONING INSTITUTE

2150 LAWRENCE AVE. CHICAGO



The Officially Endorsed School

## The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

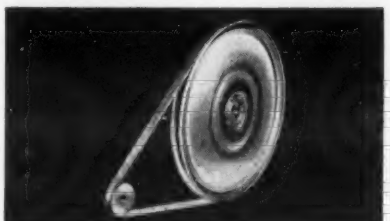
## LEADING MAKERS OF REFRIGERATING AND AIR CONDITIONING EQUIPMENT STANDARDIZE ON

## Dayton V-BELTS

● Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

Dayton V-Belts are the logical choice because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating.

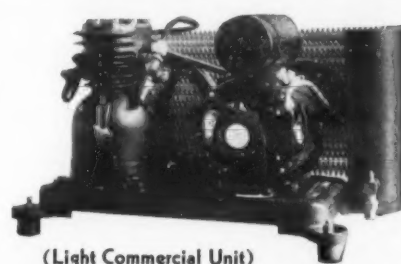
A nearby distributor carries a complete stock of Dayton V-Belts at all



Whether for Fractional or a Thousand H.P. there is a Dayton V-Belt Drive for the job.

times and can quickly supply you. Write us for price list and complete information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO  
World's Largest Manufacturer of V-Belts



(Light Commercial Unit)

## "CHIEFTAIN"

QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

All bearings diamond bored. Positive lubrication of piston by newly developed process plus forced feed lubrication in all models.

Sizes: 1/6, 1/5, 1/4, 1/3 h.p.  
Write for prices

TECUMSEH PRODUCTS CO., Tecumseh, Mich.

## MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

## CONDENSING UNITS and COMPRESSORS

FOR

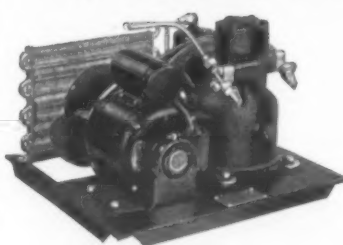
HOUSEHOLD REFRIGERATION BY

JOMOCO, INC.

A SUBSIDIARY OF THE JOHNSON MOTOR CO.

Waukegan, Ill.

CABLE ADDRESS: JOMOCO-WAUKEGAN



## REMPE

FIN COILS

for Commercial Use

Rempe Co. • 340 N. Sacramento Blvd. • Chicago, Illinois

## CASH IN ON FILTERPURE



- ✓ Installed in a minute's time in counter cases and reach-in boxes.
- ✓ Lowers temperature 8 to 12 degrees.
- ✓ Stops sweating.
- ✓ No taste transfer. You can place fish next to meat in absolute safety.
- ✓ Maintains color and firmness of meats.
- ✓ Uniform temperature and humidity.
- ✓ Retails for \$29.50.

Filterpure is the fastest selling article ever introduced in the refrigeration field. It is the "missing link" to 100% refrigeration. Write today.

BETZ CORPORATION BETZ BUILDING Hammond, Ind.

## PERFECTION Refrigeration Parts are Certified to Excel

Ask for catalog covering complete line of Valves, Fittings, and Parts for Compressors

PERFECTION REFRIGERATION PARTS CO.  
HARVEY, ILLINOIS

